The Excavating Engineer

Vol. XXIII MARCH 1929 No. 3

Front Cover Illustration: Dixie Construction Company Steam Dragline at Work at Entrance to Box Flume with New Gorgas Steam Power Plant No. 2 in Background.

IN THIS ISSUE:

Excavation for Gorgas Steam Power Plant Handled by Steam Dragline.

History of the Cement Industry.

Iowa Contractor Changes Reed Beds into Primary Highway.

Diesels Popular in Holland.

Hugh R. Smith Removes Overburden for Fuller's Earth Plant.

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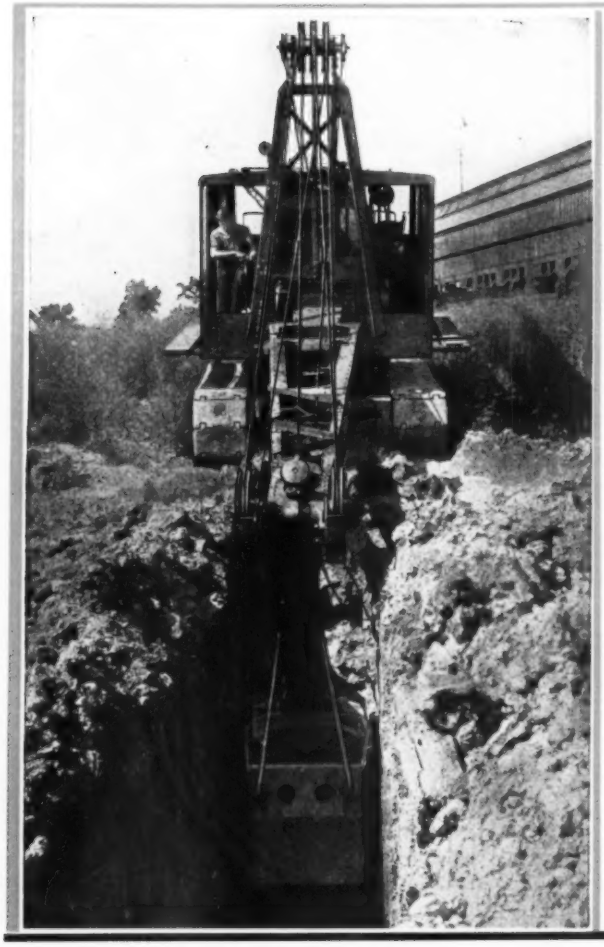
With lowest fuel cost, get the most reliable Drag-Shovel



BUCYRUS-ERIE D-2 Diesel Drag-Shovel, the most advanced Diesel-power excavator built, with the simplest and strongest drag-shovel attachment.

The first time you see this machine at work, you'll say as others have: "*It is by far the simplest drag-shovel at the business end.*"

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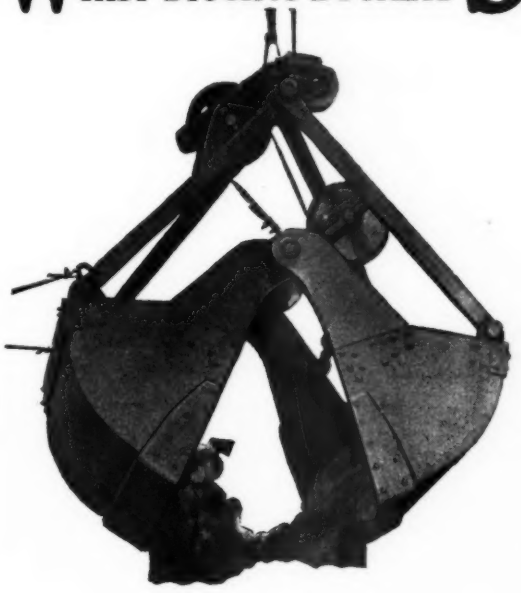

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Combined in the one way that gives a ***straight line*** closing pull; entirely free from "side leads".

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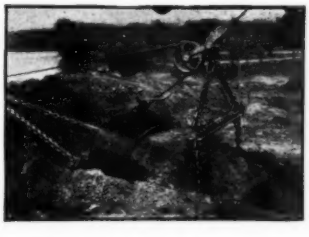

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The Excavating Engineer

PUBLISHED MONTHLY

Ten Cents Per Copy — One Dollar Per Year

Vol. 23 SO. MILWAUKEE, MARCH 1929 No. 3

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The Excavating Engineer Publishing Co.

F. O. WYSE, Manager-Editor — ARNOLD ANDREWS, Associate Editor

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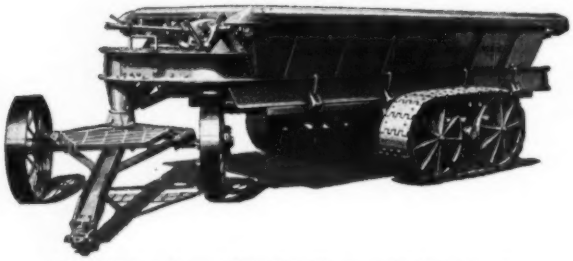
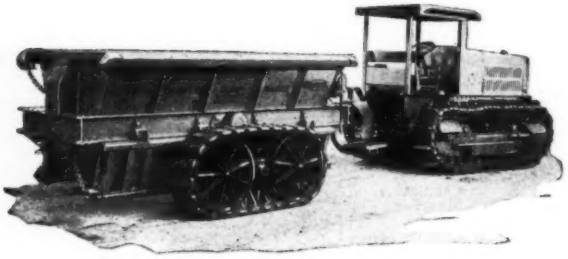
Literally going over the top. A train of two heavily loaded Western 7-yard Crawler wagons on the way to the top of a high fill.

OVER THE TOP
With Western Crawler Dump Wagons



The Western 7-yard Crawler Wagon with front truck



The Western 5-yard Crawler Dump Wagon with direct tractor hitch and no front truck

IN 1929 the contractor who uses Western Crawler Dump Wagons is in a position to clean up. With the choice of six sizes and combinations, he can equip to meet any loading, haulage or power conditions. In the years that these wagons have been in use they have revolutionized earth-moving methods. Working speed and yardage moved have been increased, costs lowered and the contractor has been given a freedom from haulage and weather conditions undreamed of before.

With Western Crawler Dump Wagons you will be able to go over the top in 1929. Prices and specifications on request.

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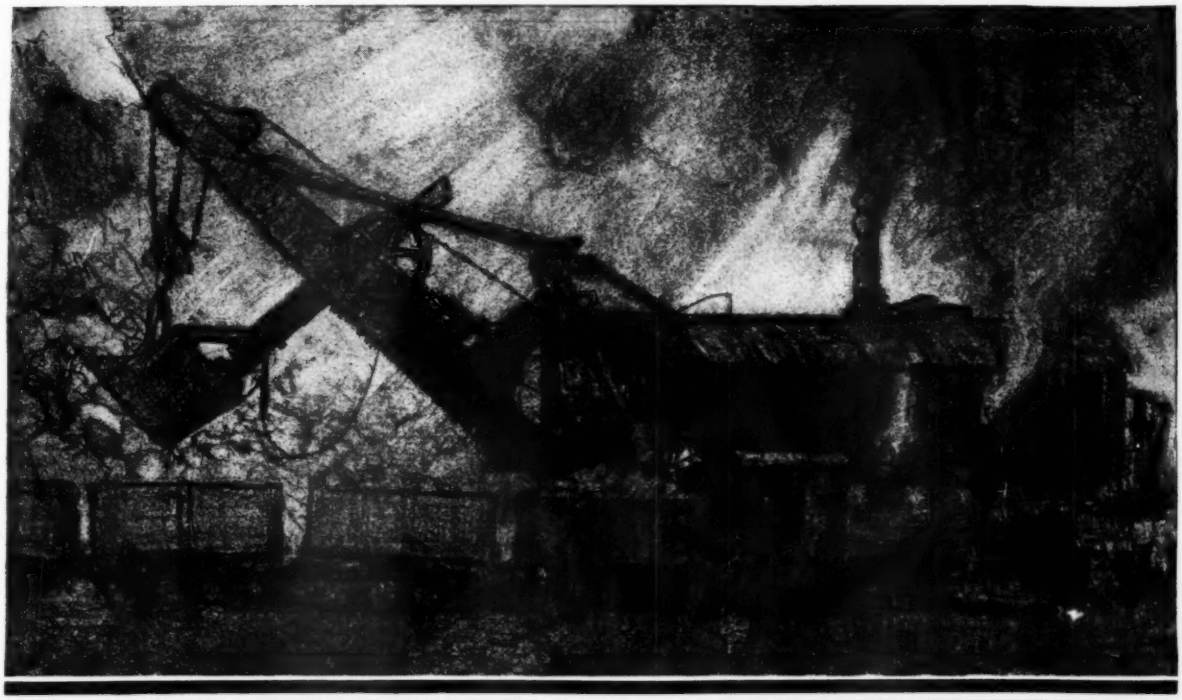

When yardage is needed . . .

HERCULES EXPLOSIVES

A western Pennsylvania contractor was rushed to complete a road job. He needed the most from his men and equipment. The cut was drilled with a heavy burden as there was no time for relief holes or springing.

He sent for Hercules Gelatin. This dense, powerful explosive broke the heavy burden and gave him yardage—lots of it—for the waiting shovel.

A new superintendent arrived at a California quarry He was after economy, and he got it on explosives costs with Hercules Hercomite. He got just as much tonnage at 20% less cost with this high cartridge-count explosive.

No matter what the circumstances—when the shovel is waiting and yardage is needed, save worry. Use Hercules Explosives.

For information on other explosives and blasting supplies, see pages 170 to 172 of the 1928 Keystone Metal-Quarry Catalog.

Hercules Powder Company, Inc., 949 King St., Wilmington, Del. Send me more information about Hercules Explosives.

Name Company Address 2597

HERCULES DYNAMITE

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Excavating at entrance to box flume looking across toward Gorgas Steam Power Plant No. 1 where Alabama Power Company generates 60,000 K. W.

Loading rock into pans with Bucyrus-Erie steam shovel from power house area intake tunnels. Bucyrus-Erie Class-14 dragline handled skips to cars.

The EXCAVATING ENGINEER

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Excavation for Gorgas Steam Power Plant Handled by Steam Dragline

Dixie Construction Company Handle 260,000 Cubic Yards of Earth and 25,000 Cubic Yards of Rock at Gorgas.

By A. T. BEAUREGARD, *Assistant Engineer*

THE Alabama Power Company's new steam plant at Gorgas, Alabama, competent judges declare, will write history for steam power in the South. The Dixie Construction Company, which is performing the construction, is now well along towards the completion of the plant. This Birmingham Company was organized in 1920 and began, the next year, the construction of Mitchell Dam for the Alabama Power Company. The Company specializes in power construction, and principally handles heavy construction for the operating companies in the group headed by the Southeastern Power and Light Company. Behind it stands the construction of Mitchell Dam, Gorgas No. 1 Steam Plant, Martin Dam, Upper Tallassee Dam, Jordan Dam, with Lower Tallassee Dam and Gorgas Steam Plant No. 2 now building, all located in Alabama. The kilowatt capacity installed or being installed by the company under this type of construction aggregates 498,000.

A. C. Polk is Construction Manager and Vice-President of the Construction Company. The design of the New Gorgas Steam Plant was handled by the Southeastern Engineering Company, Birmingham, Alabama, headed by Professor J. M. Gallalee. The construction force was managed by Frank Smith.

The first unit of the new plant will add 66,667 k.v.a. to the Alabama Power Company lines. A glance at the accompanying map will show the location in regard to its position on the Warrior River and the old Gorgas Steam Plant. The design and arrangement embody all that is modern and up to date in steam — pulverized fuel, two 3032 B.H.P. boilers, a 70,000 square feet surface condenser, induced draft fans large enough to take 1800 horse power motors to operate them, a single turbine generator with extraction outlets and steam at 400 pounds. The plant will carry base load.

Excavation Problem Important One

The question of excavation was an important one. The problem was to remove from 25 feet to 30 feet of hard clay from the underlying strata of slate. In the area of the discharge and intake tunnels along the west side of the plant, it was necessary to shoot the slate for 8 feet and then to drill and shoot an additional 10 feet through hard

Early operations in excavating for intake canal for Gorgas Steam Plant No. 2. On this operation production was about 1000 yards per 10-hour shift.

sandstone. It was decided to make this excavation with a Bucyrus-Erie Class-14 dragline, steam driven and mounted on caterpillars. The machine was equipped with a 2-yard bucket and a 60-foot

Even slopes were cut by Class-14 dragline for intake water canal. Machine may be seen in distance removing second cut.

boom. The earth was loaded into dump cars and hauled by dinkeys to the west side of the plant, where it was used to build up the substation yard fill.

In the power house area which was approximately 210 feet wide, the excavation was made in three cuts, beginning on the west side. After the first cut extending north and south was made, a small Bucyrus-Erie steam shovel was run into the hole, and rock was drilled, shot and loaded into skip pans which were removed by the dragline. Later derricks were installed in this area to handle the skips for completion of the rock excavation. The total material removed in the power house area by the dragline amounted to 50,000 yards of earth and approximately 8,000 yards of rock, the latter being loaded by the small shovel. In addition to this, about 2,500 yards of earth and 8,500 yards of rock were handled by derrick from the steam shovel in skip pans or by a railroad crane rigged with a clamshell.

Canal Dug in Two Cuts

Inasmuch as the Warrior River at this point has very little flow during dry periods of the year, it was found necessary to construct an intake water canal 2,500 feet up the river in order to avoid the effect of the condenser discharge water from Plants No. 1 and 2 circulating upstream. The 2-yard dragline was called upon to dig this upper canal. The average depth of the excavation was between 25 and 30 feet, which, with a bottom width of 10 feet, necessitated two cuts by the machine. The machine traveled up the north bank of the canal in its first pass, throwing the spoil on the bank. The start was made at the slough. (See map.) At the upper end of the canal, in order to avoid cutting the rock, which at this point sloped up into the bottom of the canal, the bottom was widened, giving a maximum width at the top of about 160 feet. This increased width at the bottom was obligatory in order to maintain the desired cross section area. At the entrance to the canal, where the curve is, a glance at the map shows that there was insufficient room to place the earth between the canal and the river. For this reason, it was necessary to remove the excavation by rehandling two and sometimes three times.

Exact Slope Cut by Dragline Without Redressing

It was found in this excavation that the operator was able both during the night shift and day shift to cut an almost exact two-to-one slope which would need no redressing.

On the return trip, because of limited amount of space for spoil between the canal and the river, track was laid, earth was loaded into cars and hauled to the power house area where it was utilized as backfill. Part of the excess fill, however, was used to build a dyke across the slough, in order to separate it from the river, and in addition to leave a dyke along the whole south side of the canal. The yardage amounted to 95,000 yards, not including the dam left to be hauled later.

In moving from the power house to the west end of the upper canal the excavator constructed its own fill across the slough. No trouble was experienced in making this crossing. A dam was left at both ends of the upper canal so that the operator was able to excavate almost entirely in dry soil.

After re-arriving at the west end of the canal, the lower dam was removed. The upper dam will be removed by a derrick barge rig when the intake crib structure is being constructed.

Pumps Profitably Used to Keep Lower Canal Dry

The dragline was also employed to dig the section of the lower canal about 1,400 feet long between Baker's Creek and the slough. In this case, again, retaining dykes were left at each end of the canal in order to permit dry excavation. It was found that the cost of installing pumps to keep the cut dry from river seepage was well repaid by the accuracy of the slope, the decrease in quantities removed and the increased speed. In constructing the lower canal, which is of slightly different section from the upper part, two cuts will be necessary. The spoil will be carried in dump cars to be used as backfill around the power house. The yardage in the lower canal will amount to 83,000 yards of earth, with 4,500 yards of rock at the intake directly south of the plant.

Carrying the cool condensing water for the No. 1 plant intake across Baker's Creek for use in Plant No. 2 entailed the construction of a wooden box flume. At first it was planned to remove the caterpillars from the dragline and to set the machine on a barge for handling this excavation. Subsequent investigations revealed that construction schedules would be too much changed, and for that reason the scheme was abandoned and a derrick barge was rented.

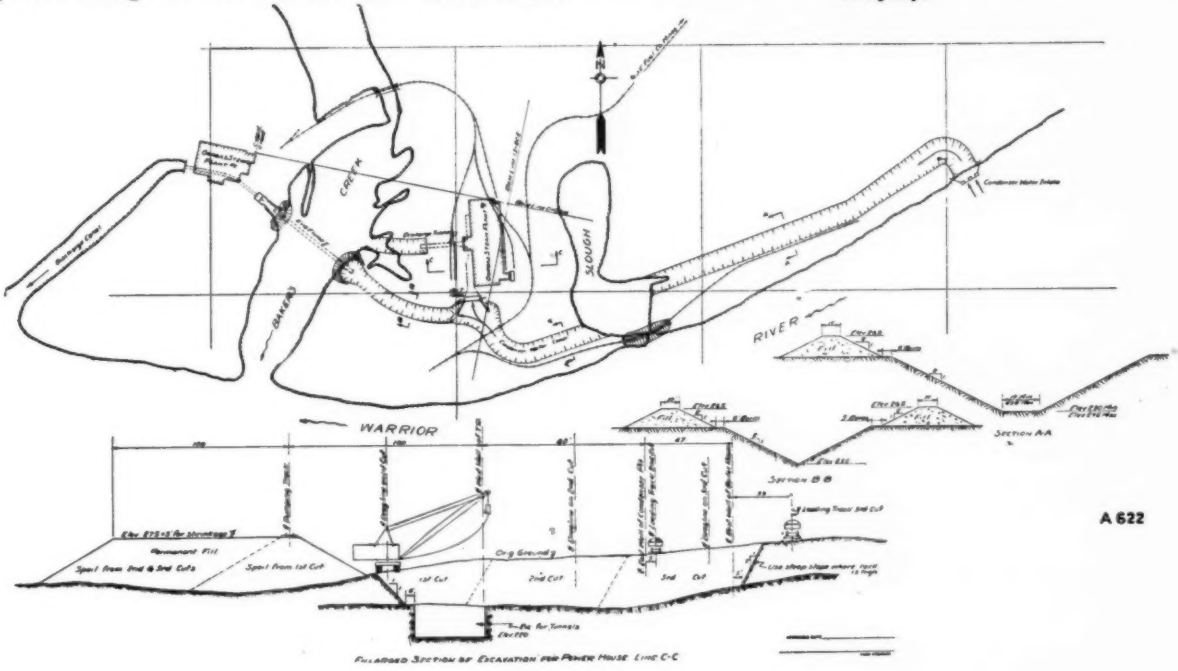
The dragline excavator was then used for tunnel west of the plant. Here the earth spoil was placed along the sides of the cut. Rock to the amount of 4,500 yards was loaded into skip pans and removed by the dragline. This excavation which averages 25 feet in depth and 56 feet in width was made in a single cut.

200,000 Yards Earth and 8,000 Yards Rock Removed January 23rd to October 1st

From January 23, 1928, to October 1, 1928, the Bucyrus-Erie dragline was billed as follows:

Working (including delays for waiting)	3,781 hrs.
Idle (repairs and cleaning)	215 hrs.
Moving	126 hrs.
Total	4,122 hrs.

Removing earth from power house area with 2-yard dragline. "The bucket gets a full load every trip," says C. D. Riddle, engineer of construction for Dixie Contracting Company.



On March 15, 1928, two 10-hour shifts per day were begun. During this whole period the machine has excavated about 200,000 yards of earth, and removed in skip pans about 8,000 yards rock.

The total operation will entail, it is estimated, 260,000 yards of earth and 25,000 yards of rock.

The Class-14 dragline was operated during the day shift by Thomas M. Hawn and by Ed. Jones at night, the latter also operating the Erie shovel early in the job.

History of the Cement Industry

By FRED B. FRANKS, SR., *Vice-President and General Manager, Keystone Portland Cement Company*

Fred B. Franks, Sr.

A Builder of Cement Plants

In the Lehigh Cement region, which produces more Portland Cement than any district fifty times its area, there lives a man whose name is synonymous with Portland Cement; that man is Fred B. Franks, Sr., Vice-President and General Manager of the Keystone Portland Cement Company of Allentown, Pennsylvania.

In 1900 Mr. Franks organized the Martins Creek Portland Cement Company, and constructed for the company a plant at Martins Creek, Pennsylvania. This plant was sold to the Alpha Portland Cement Company in 1904.

In the same year Mr. Franks organized The Bath Portland Cement Company, building a plant at Bath, Pennsylvania. This plant, one of the largest in the Lehigh district, had a capacity of one million barrels per year, but was inadequate to supply the demand for their product, which had an international reputation. Mr. Franks therefore designed and built a new plant for this company at Sandts Eddy, Pennsylvania. This was started in 1924, completed in 1925, and, in this same year, was sold together with the Bath plant to the Lehigh Portland Cement Company of Allentown, Pennsylvania.

The average constructor, with three such plants to his credit, might have felt that his life's work was finished and that the time was ripe for his retirement. Not so Mr. Franks. After most exhaustive research, he concluded to organize a new company and to construct for this company a plant that, in itself, would not only be the last word in efficient operation, but would produce the finest quality of cement.

So in 1926 the Keystone Portland Cement Company was organized, with John M. Buckland of Allentown, Pennsylvania, as President, F. B. Franks, Sr., of Allentown, Pennsylvania, as Vice-President and General Manager, and E. J. Fox, of Easton, Pennsylvania, as Treasurer.

The new Keystone Plant is located about one mile southeast of Bath, Pennsylvania, and has siding connections to both the Delaware and Lackawanna and the Central Railroads. The property comprises about four hundred acres of cement rock.

For many years, the cement manufactured in this country has been by the two-stage dry process, that is, the kilns had two separate stages for burning and cooling. The Polysius process used at Keystone combines these two stages into one continuous operation, thereby eliminating expense, and produces, through this process what, in cement vernacular, is known as "Wet Process" cement that will attain a tensile strength of 220 pounds per square inch in twenty-four hours. — Ed.

THE evolution and progress of the world are marked by the Ages through which it has passed: The Stone Age, the Bronze Age, the Iron and Steel Age have each had their day, and now we have the Cement Age.

This new Age will forever be associated with the period which has seen men's greatest victories in industrial development, and there is no possible doubt that the many remarkable achievements of the Cement Age will live for all time.

In this titanic wave of constructional endeavor, Cement has played a part of paramount importance. Indeed it is safe to say that the present rate of progress of an industrial nature would have been impossible without it. It allows construction on a huge scale hitherto undreamt of, and its utility and economy permits of such wealth of architectural adornment that the most ornate conception of the inspired architect may be realized.

The history of cement dates back to the day of the ancient Romans. While the materials they used were crude in comparison with the Portland Cement of today, it says much for the skill of the ancients that the artificial stone which they produced has stood the test of nearly 2,000 years. There are roads in Italy, Southern France and England which are still in a remarkably fine state of preservation.

Blast hole drilling at the Keystone Plant is handled by two Cyclone and two Keystone gasoline-driven machines.

Without a doubt their method of producing cement has been lost as no one has ever been able to determine just how it was manufactured or what materials were used. The cement mortar binding the stone together was much stronger than the aggregate used.

Joseph Aspdin Invents Portland Cement in 1824

Towards the end of the eighteenth century experiments were made both in England and France, and a natural cement was developed which has been used to the present time. In 1756 Smeaton, an engineer, made a series of experiments on lime mortars. In 1796 a man named Parker invented a natural cement which he called "Roman Cement." Twenty-eight years later, in 1824, Joseph Aspdin, a native of Leeds, Yorkshire, applied for and received a patent for a cement product. This he called "Portland Cement" by reason of its resemblance, when set, to the color of the limestone quarried on the Island of Portland. This was the first distinction between natural and Portland Cements.

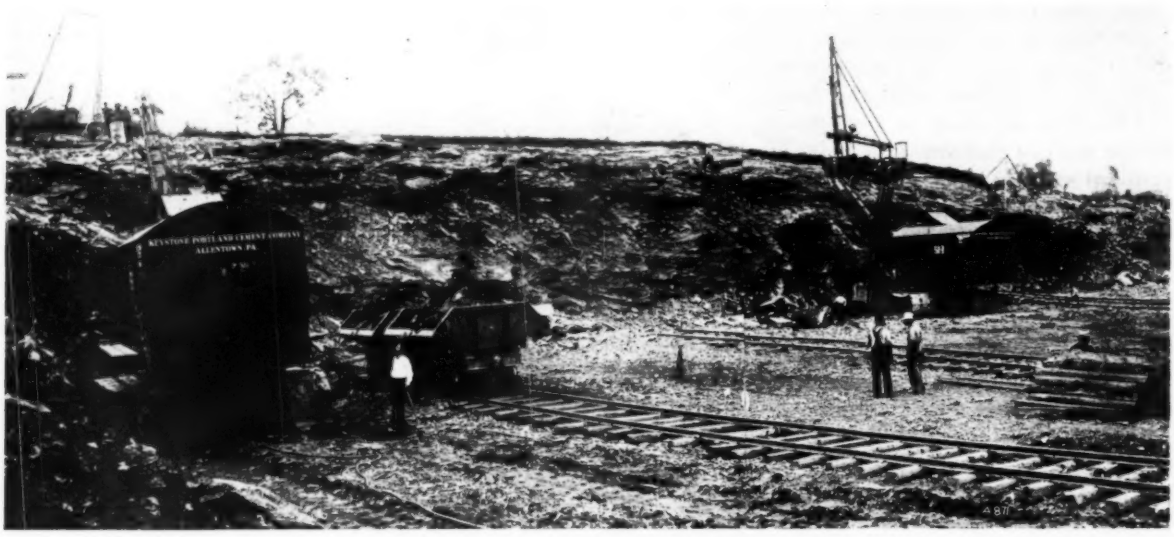
Aspdin erected a factory at Wakefield, England, for the manufacture of his cement which was used on the Thames Tunnel in 1828.

The point of incipient vitrifaction was made use of in the famous old works of White & Brother established in 1825 and still existent. In 1852 the first German Portland Cement works were established in Stettin, Germany.

Cement Industry in the United States Begun in 1818

In this country the cement industry began with

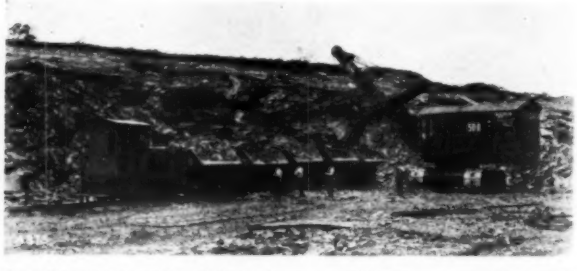
The 1,000,000 barrels per year Keystone Plant at Bath, Pennsylvania, was constructed by the M. A. Long Company of Baltimore, and is equipped almost entirely with mechanical equipment manufactured by the Polysius Corporation of Bethlehem, Pennsylvania.



Two Bucyrus-Erie 50-B electrics load the rock from the quarry. The opening of the quarry being from a high face and on a level with the plant itself eliminates for a great many years the necessity of elevating raw materials to crushing plant.

the discovery in 1818 of a natural cement rock in Madison County, New York, by Canvass White, an engineer engaged in the construction of the Erie Canal. He applied to the State of New York for the exclusive right to manufacture cement for twenty years. This was denied but the state gave him $20,000.00 in recognition of his discovery. This cement was used in large quantities in the construction of the Erie Canal and brought a price of about 20 cents a bushel. In 1828 a mill was constructed at Rosendale, New York, which name is still largely applied to American Natural Cements.

The first Portland Cement was produced in this country by the Coplay Cement Company in 1875. Very much difficulty was experienced in marketing the product as the foreign cements had an established record. It was only after a liberal use



Loading into 10-ton Phoenix cars which are manufactured by the Easton Car and Construction Company and are hauled by 15-ton Whitcomb gasoline locomotives.

of advertising and an ironclad guarantee of their product that they were able to market the cement. During the time Saylor was conducting his experiments in the Lehigh Valley, other companies were starting to make cement in other states.

Among them was a plant constructed at Kalamazoo, Michigan, one at Mampum, Pennsylvania, South Bend, Indiana, Rockport, Maine, most of which proved failures and represented a complete loss to their promoters.

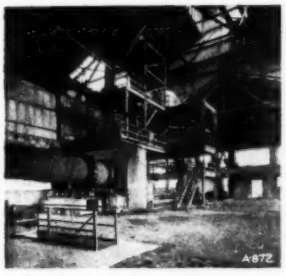
In 1883 the manufacture of Portland Cement was started at Egypt, Pennsylvania, also near Allentown, Pennsylvania, by Robert W. Leslie, the first President of the Association of American Portland Cement Manufacturers. This plant progressed gradually and developed into the American Cement Company. From this time on plants sprang up rapidly in the Lehigh Valley sections, also in other sections successful mills were built.

From 1870 to 1879 only 82,000 barrels of Portland Cement were produced over a period of nine years. From 1880 to 1895 the average production per year was approximately 350,000 barrels. From 1896 to 1909 production increased steadily and in 1909 it was 62,508,000 barrels. The total quantity produced from 1870 to 1909 or a period of 39 years, was 395,000,000 barrels or practically an average of 10,000,000 per year. Let us compare the past fifteen years and you find from a consumption of 64,991,430 barrels in 1909, 170,922,000 barrels were consumed in 1927 or an increase of over 150 per cent.

The Lehigh Valley supplies 50,000,000 barrels or approximately one-third of the cement consumed in the United States. While there are cement plants located in practically all of the 48 states, it is only in the Lehigh Valley where the true natural Portland Cement rock is found, it being necessary at other localities to blend limestone, shale, clay, etc.

Although you may not have stopped to think

much about it, the day never passes but that you come in contact with cement in some form or other. The sidewalks you walk on, the paved streets and roads you ride over, the buildings you work or live in owe much to cement. You will find it in fire-safe schools, protecting the lives of children, in bridges and tunnels, making railway travel safer and swifter. It is indispensable on the farm for permanent improvements — for silos and feeding floors, rat-proof granaries and sanitary milk houses. Country roads now equal city boulevards because of concrete pavements.



Coal Mill at Keystone Plant with induction coal dryer and Solo Tube mill pulverizer driven by General Electric 350 H. P. motor.

The very same cement that is put into a skyscraper or a hotel could have been utilized just as well in making a bird bath, a bungalow, a fence post, or a swimming pool. Cement has a thousand uses. Whether you are busy at work in search of recreation — whether you are in the city or on the farm — you are constantly coming in contact with examples of what cement is doing for you. Because of these widespread uses of cement, it is only natural that people should want to know more about this material that has come into such common use and that offers so many advantages. For in spite of the development of the cement industry it is comparatively a newcomer. Thirty years ago this country made less than a hundredth part of the Portland Cement it now makes.

Going Up

It seems that the dean of a certain college was called to investigate a charge made by some of the girls. They reported that the men who lived in the fraternity next door invariably forgot to lower their shades at night. The dean looked out through all the sorority windows and then said, "Why, I can't see into any of the windows in the fraternity house."

A meek voice from one of the girls said, "Oh, yes you can, only you have to stand on a chair."

— *Electrikat.*

Joe Very Sick

Two Osage Indians took on so much fire water they wound up in a hospital.

"How do you feel now?" a pretty nurse asked the first Indian the next morning.

"Me all right," said Indian No. 1. "But Joe very sick. Joe he blind. Last night five turkey buzzards with big plug hats sit on bed and Joe no can see 'em. Joe his eyes very sick."

Bates and Rogers Construction Company Excavating One and One-Half Million Yards for Southern Railway Company

Double tracking and grade revision of the line of C. N. O. & T. P. Company between Lexington and Danville, Kentucky, are being pushed to rapid completion. Bates and Rogers Construction Company, whose head offices are at Chicago, Cleveland and New York City, have the contract for twenty-one miles of this grading between Lexington and High Bridge, Kentucky. Contract started in September 1928 and completion time is 18 months. The excavating equipment they are using consists of two Bucyrus-Erie 50-B shovels, one

This Bucyrus-Erie 50-B at work for Bates and Rogers Construction Company on their Southern Railway Company contract, is now engaged in taking out a cut amounting to 172,000 yards, of which approximately 80% is rock.

70-C railroad-type shovel, one Model 60 Marion, one 1-yard Lorain Gas, three 1-yard Eries and one ¾-yard Erie. The total yardage to be handled by these machines is estimated at approximately 1,500,000 — 80 per cent of which is rock.

District Manager E. S. Whitney of Lexington, Kentucky, has charge of the work for Bates and Rogers Construction Company.

Accident Insurance

"Say, Boss," cried a dark-skinned customer, rushing much perturbed into a store, "a no-'count boy has threatened my life. Ah craves protection."

"How about a bullet-proof vest?" queried the man behind the counter.

"Wuthless, plumb wuthless. Ain't yo' got no razzor-proof collahs?"

A Real Fellow

"Got a sweetheart yet, Lily?"

"Yes, and he's a regular gentleman."

"You don't say so?"

"Yes, he took me to a restaurant last night and poured his tea into a saucer to cool it; but he didn't blow it like common people do — he fanned it with his hat!"

Iowa Contractor Changes Reed Beds into Primary Highway

Diesel Draglines Used for Various Dirt-Moving Jobs by C. E. Walker.

C. E. Walker straightens the channel of the Buck River at Centerville, Iowa.

C. E. WALKER of Cedar Rapids, Iowa, started in the drainage and levee construction business for himself back in 1918. Since that time he has handled many a hard job and has achieved an excellent reputation as a dirt mover.

Handling 125,000 Cubic Yards in Bremer County

Last spring he finished up 6 miles of grading on Primary Road No. 10 for the State of Iowa. This stretch of highway runs from Waverly to Ollwein, Iowa, in Bremer County. Fred Thielen of Ollwein, Iowa, was in charge of the work for the Iowa State Highway Commission, while Mr. Walker took personal charge of the excavation on this contract.

The work consisted of moving 125,000 cubic yards of material, consisting of gravel and common, much of the right-of-way running through farm lands. In some places the road ran through an old river bottom, and grading through muck from old sloughs was one of the problems to be handled.

Work Done with Diesel Dragline and Elevating Grader

Part of the work, about 30,000 cubic yards, was handled by an elevating grader outfit loading into wagons. The balance of the excavation was handled with a Bucyrus-Erie D-2 Diesel Dragline. All of the dirt was hauled from borrow pits which had to be left smooth, with true slopes of one to one and one-half. These borrow pits had also to be left so they would drain. This meant extra work, and sometimes material had to be handled twice in order to keep the borrow pits within the required specifications. Also the fill in many places was very light, and the careful finishing required held down the output. Even so the average output per month with the D-2 Diesel ran about 21,000 yards.

Diesel Uses 12 Gallons Fuel Oil for 10-Hour Shift

Jim Sarvis and Lester Maltas were the operators on the Bucyrus-Erie dragline. Records of the fuel used show the Diesel burned about 12 gallons of fuel oil to a 10-hour shift. Upkeep costs are also considered by Mr. Walker to be very reasonable, the total expense for this item from May 10 to December 10, 1927, being $94.00, including some extra parts which it seemed advisable to keep on hand.

C. E. Walker has also used his D-2 Diesel on drainage and levee work in Muscatine County, Iowa, and on an 80,000 cubic yard drainage job at Fort Madison, Iowa, where he also used his Bucyrus-Erie E-2 Diesel dragline.

Loading White trucks with Bucyrus-Erie E-2 dragline on the Centerville job.

Now Completing 150,000-Yard Job at Centerville

One of the jobs Mr. Walker is handling at present is construction of a road at Centerville, Iowa, where he is moving a total of 150,000 cu. yds. Part of this job consisted of straightening the Buck River channel for about 3,000 ft., and using the excavating material to build the road. Mr. Walker handled this operation with his Bucyrus-Erie E-2, loading into seven White 2½-ton trucks. A Fordson tractor with a blade grader did the finishing. This job will be completed in the spring of 1929.

Fuel Consumption and Production for the Diesel Draglines

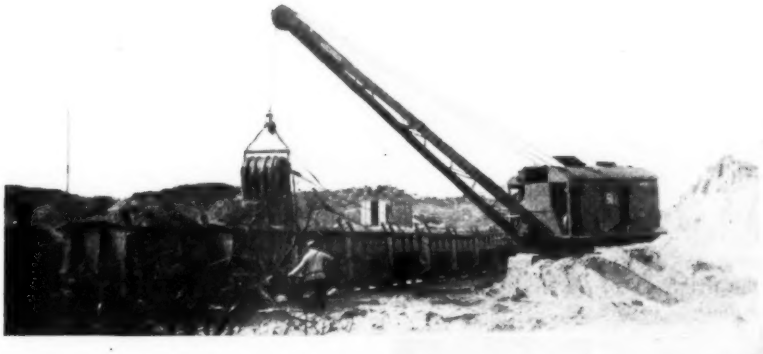
Mr. Walker reports that the E-2 Diesel had about the same fuel consumption as the D-2. The D-2 has handled as high as 1,000 cubic yards in a 10-hour shift, and the average production of this D-2 is 800 cubic yards in 10 hours. On the E-2 the record production so far stands at 1,200 cubic yards on a shift, with an average of 1,000 cubic yards per 10-hour shift.

Grading on Iowa State Highway No. 10.

Diesel draglines are used by Mr. Walker to handle the grading. The D-2 above is working in Iowa muck.

In addition to the operations mentioned above, Mr. Walker is also handling a railroad job at Jennings, Kansas, and an underground railroad crossing at Moravia, Iowa; a storm sewer outlet at Ottumwa, Iowa, and a road job at Curtiss, Iowa.

Diesels Popular in Holland



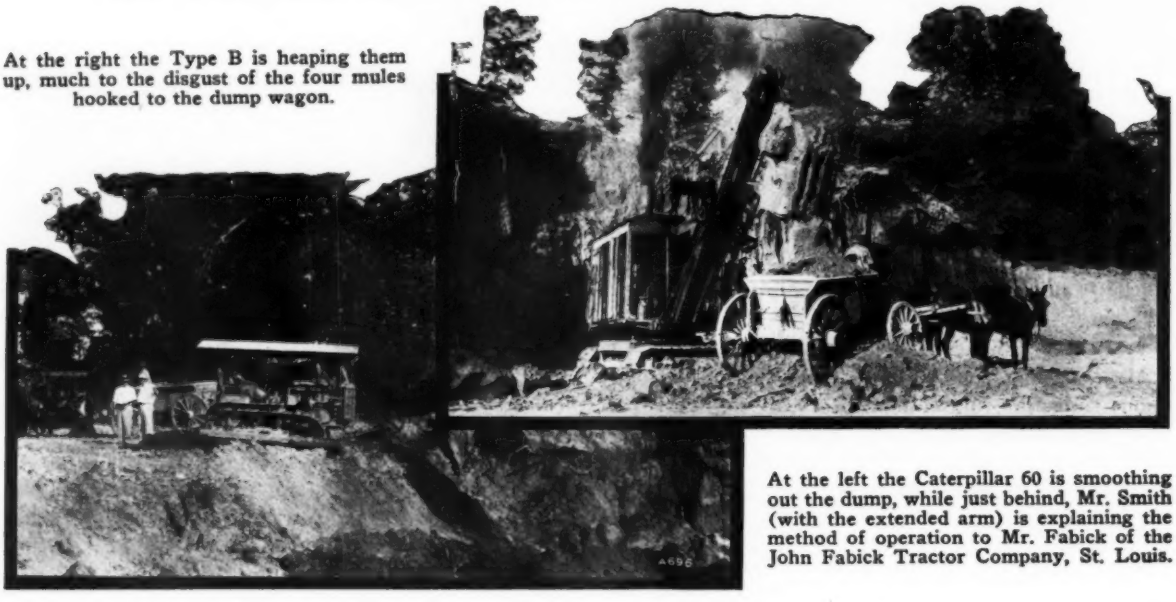
THE accompanying photographs were taken in Holland, near the docks of Amsterdam, and show a Bucyrus-Erie 50-B Diesel working for an Amsterdam contractor. This company has two of these Bucyrus-Erie 50-B machines, each arranged to work either as dragline or shovel, as best suits the job at hand. The machines are working in the dunes, removing sand that is used in building harbors, or is sent to Amsterdam for filling up swampy country and making the level of low country higher for building purposes. This company also operates a Bucyrus-Erie D-2 dragline which they have working on the big Zuider Zee works, where it digs boulder clay for making the dikes. These Zuider Zee operations are among the most important reclamation projects in the world, and represent one more step in Holland to recover more land in the age-old battle with the sea. The new dike now being built will keep out the sea from areas that are still covered by 8 to 20 feet of sea water.

Getting His Money's Worth

Waiter: "Hey! What's the idea of stuffing the tablecloth in your pocket?"

Diner: "Well, you charged me two dollars for cover and I thought I'd take it with me."

Hugh R. Smith Removes Overburden for Fuller's Earth Plant



At the right the Type B is heaping them up, much to the disgust of the four mules hooked to the dump wagon.

At the left the Caterpillar 60 is smoothing out the dump, while just behind, Mr. Smith (with the extended arm) is explaining the method of operation to Mr. Fabick of the John Fabick Tractor Company, St. Louis.

Starting on July 10th and finishing on November 24th, Hugh R. Smith, contractor, of Olmstead, Illinois, did a snappy job in the removal of 80,000 yards of overburden from the Standard Oil Company's Fuller Earth deposits along the banks of the Ohio River at Olmstead. For this work, Mr. Smith used his Type B Erie steam shovel, six wagons with "four-up" and a Caterpillar 60 bull-dozer.

Make Your Own Progress Photographs

It is the usual custom on large operations nowadays to keep photographic records of the progress of the contract under way. This offers protection to the contractor in case of future legal difficulties, and further such pictures are of value in estimating future jobs and making comparisons of conditions and methods of operation years after the job is completed. On smaller operations the hiring of a commercial photographer to take progress photographs is usually too expensive, even if a photographer is conveniently available. Oftentimes also the job is so located that the cost of getting a commercial photographer in and out would be entirely too high.

This, however, is not a serious handicap for a camera may be kept on the job, and one of the engineers or a timekeeper may be delegated to take pictures at regular intervals. With the present excellent smaller-sized cameras good results can easily be obtained by using a little care in following the directions, and the resulting pictures can be mounted in scrap books or on filing cards, together with a complete notation showing date and the location of the view.

This camera record is of particular value in cases where the executive offices of the company are not located on the job. A half-dozen post card size prints or larger views inclosed with the reports give a more accurate and complete story of the job than could be contained in pages of letter writing.

Neat Extension for Small Drain Cock Handle

Quite often there are several drain cocks on the machine that are just "darn mean" to get at to open or close, and particularly so when they are hot. One of such which was down between two pipes was nicely fixed as shown above. The end of an old Ford engine valve was annealed, and split with a hacksaw for about an inch, cutting, of course, crosswise with the cotter keyhole. It was then spread to go over and snugly fit the handle of the drain cock, through which a ⅛-inch hole was drilled. A cotter key held it in place. Very easy to open and close the cock then in spite of its location or how hot it became. — *Frank W. Bentley, Jr.*

Some Don'ts for Winter Drilling

Don't start drilling in extreme cold weather without first pouring hot water on the tool joints and end of bit, to take part of the frost out of the steel, in order to prevent breakage.

Don't run a water-soaked, frozen-stiff manila line, as you are likely to ruin it. Freezing weather will not injure wire rope if kept well lubricated.

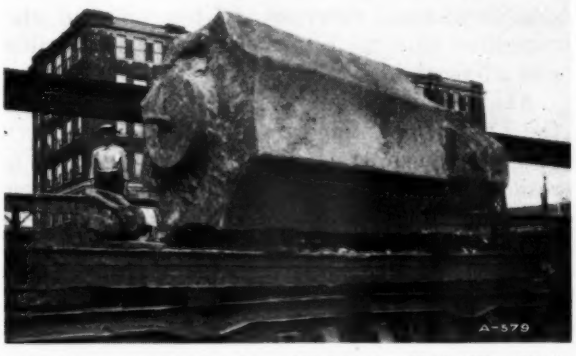
Don't heat a cold bit rapidly. Let it absorb the heat slowly at first, otherwise you are liable to damage the steel.

Don't expect a driller to stay out in the cold weather, without some kind of a windbreak at least.

— The Armstrong Driller.

Railroad Cranes Handle Huge Shaft for Electric Generator

We illustrate here the lifting and reloading of a 228,983-pound electric generator shaft. The shaft is a solid forging made from an open-hearth steel ingot weighing 455,360 pounds. This open-hearth steel ingot was melted, cast, forged and rough machined in the Philadelphia plant of the Midvale Company. The length of the shaft is 24 feet 7¼ inches, and the length of the largest diameter 20 feet 8 inches. The largest diameter was 5 feet 3 inches.



The Mammoth Casting from Which the Shaft Was Made.

Reading Company Railroad Cranes Lowering the Giant Shaft Into Place on the Car.

Photographs Courtesy of the Midvale Company.

What Has Become of the Panama Gang?

Photo Courtesy W. G. Montford

"Many of Them Died for the Cause."

Charlie Nylon and his crew (except cranesman Jake Heck) were killed when this great rock dropped on the shovel they were operating in Portobello quarry, Panama Canal Zone.

There's not one of us ignorant of the building of that great engineering feat, the Panama Canal. There's not one of us who haven't read stories of heroism, pain, suffering, and achievement on the part of that historical gang of men. We can never forget them. Many of them died for the cause. Many more of them are still with us, reliving through dreams of the past their experiences there. The Panama Canal rests as a monument to their deeds.

The following little poem resounds their spirit while the job was still in force of construction, just being finished — but — where is this fiery gang from the Panama? In what corners of the earth might we find them today?

At Your Service

(The Panama Gang)

BERTON BRALEY

Here we are, gentlemen; here's the whole gang of us,
Pretty near through with the job we are on;
Size up our work — it will give you the hang of us —
South to Balboa and north to Colon.
Yes, the Canal is our letter of reference;
Look at Culebra and glance at Gatun;
What can we do for you — got any preference —
Wireless to Saturn or bridge to the moon?
Don't send us back to a life that is flat again,
We who have shattered a continent's spine;
Office work — Lord, but we couldn't do that again.
Haven't you something that's more in our line?
Got any river they say isn't crossable?
Got any mountains that can't be cut through?
We specialize in the wholly impossible,
Doing things "nobody ever could do."
Take a good look at the whole husky gang of us,
Engineers, doctors and steam shovel men;
Taken together you'll find quite a few of us
Soon to be ready for trouble again.
Bronzed by the tropical sun that is blistery,
Chockful of energy, vigor and tang,
Trained by a task that's the biggest in history;
Who has a job for this Panama Gang?

Nice Girl (leaning out of window): "Hey, Mr. Iceman, have you got the time?"

Iceman: "Yes, ma'am, but I ain't got nobody to hold the horses."

The EXCAVATING ENGINEER

A Monthly Publication Devoted to Excavating and Allied Subjects

REGULAR SUBSCRIPTION: $1 00 a year for 12 numbers.
SPECIAL SUBSCRIPTION: Upon application on card inserted in this number, subscriber's name will be placed on Rotating List, whereby he will receive The Excavating Engineer frequently (not regularly) free of charge.

THE EXCAVATING ENGINEER PUBLISHING CO.
F. O. WYSE, Manager-Editor ARNOLD ANDREWS, Associate Editor
South Milwaukee, Wisconsin
Printed in the U. S. A.

The Business Situation

During the past month the record of the steel and iron business has been good. Automobile business has also given a good account of itself. Other indexes of business activities such as freight car loadings and bank clearings have shown some irregularity. There seem to be, however, no indications that business should suffer any slacking of activity.

The New York stock market seems to have been holding the center of the stage during the past several weeks. Security prices have been going up and up with only comparatively minor reactions. Call rates are rising and new funds are flowing in. Prices of securities have certainly risen out of all proportion to their actual value and their earning power present or future.

Inflated values of securities and general business speculation hold danger in both high interest rates and in a possible drastic decline. During the middle of the month of February the Reserve Board issued a warning and further threatened to "restrain the use of Federal Reserve credit facilities in aid of the growth of speculative credit." Whether or not the Federal Reserve Board can put teeth in its warning is another question but it is certainly a move in the interests of business to curb the present speculation.

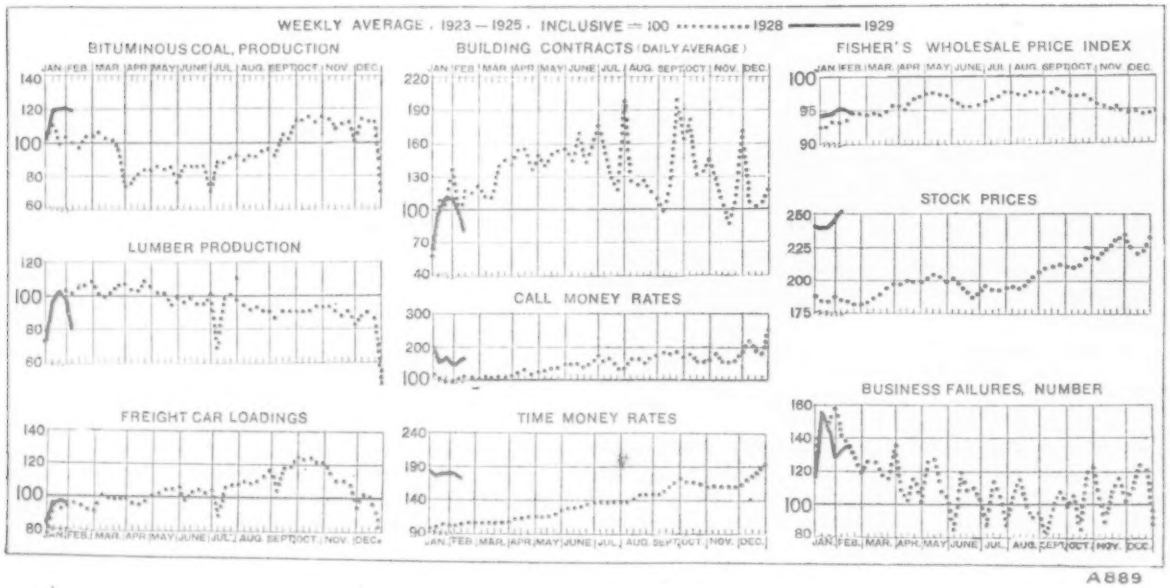
Although, so far the widespread speculation on the stock market has not affected business to any extent, perhaps the decline in general construction is due somewhat to the money situation, although undoubtedly other facts have been partly responsible.

Total construction contracts awarded during January in the 37 states east of the Rocky Mountains amounted to $409,967,900, according to F. W. Dodge Corporation. These states include about 91 per cent of the total construction volume of the country. When the above figure was compared with the total for the corresponding month of last year there was a decrease of 4 per cent and when compared with the total for December 1928 there was a 5 per cent decrease.

Analysis of the January contract total showed the following important classes of work: $138,068,600, or 34 per cent of all construction, for residential buildings; $100,378,000, or 25 per cent, for commercial buildings; $66,522,000, or 17 per cent, for public works and utilities; and $63,108,900, or 16 per cent, for industrial projects.

During the month of January there was $818,284,000 worth of new projects reported in contemplation in the 37 Eastern States. The above figure was 13 per cent ahead of the amount re-

WEEKLY BUSINESS INDICATORS


WEEKLY AVERAGE, 1923 — 1925, INCLUSIVE = 100 ····· 1928 ——— 1929
BITUMINOUS COAL, PRODUCTION
BUILDING CONTRACTS (DAILY AVERAGE)
FISHER'S WHOLESALE PRICE INDEX
LUMBER PRODUCTION
CALL MONEY RATES
STOCK PRICES
FREIGHT CAR LOADINGS
TIME MONEY RATES
BUSINESS FAILURES, NUMBER
JAN. FEB. MAR. APR. MAY JUNE JUL. AUG. SEPT OCT. NOV. DEC.

A889

ported in December 1928, but there was a drop of 10 per cent, from the amount reported in January of last year.

It is interesting to study the weekly business indicators supplied by the United States Department of Commerce bearing in mind the position of the curves in 1927 as well as 1928. Building contracts have pretty much followed the same curve as 1928. Steel operations at the end of 1928 were very much higher than they were at the end of 1927 although approximately the same as at the beginning of the year 1927.

Call money rates began their spectacular rise during 1928 and the curve reproduced here does not show the wide diversion between the latter part of 1927 and the latter part of 1928. The same holds true for time money rates and to a lesser degree for stock prices.

New Officers Elected at the National Crushed Stone Convention

At the annual meeting of the National Crushed Stone Convention, January 21st to 24th, the total registration was 536, of whom 234 were active members, 194 associate members, and 108 were guests.

The proceedings, briefly described in our February number, will soon be published in book form by the National Crushed Stone Association. During the past four years, under the able management of President Otho M. Graves, and his very able staff of executive officers, very satisfactory progress has been made, and we are sure that equal success will reward the efforts of the new president W. F. Wise, President of the Southwest Stone Company of Dallas, Texas. Other officers elected were:

Regional vice-presidents, Arthur S. Lane, president of John S. Lane Son, Inc., Meriden, Connecticut (Eastern); Allen Patterson, president of National Lime and Stone Co., Findlay, Ohio (Central); T. I. Weston, president of the Weston and Brooker Co., Columbia, South Carolina (Southern); Harry Landa, president of the Landa Rock Products Co., New Braunsfels, Texas (Southwestern); W. R. Sanborn, general manager of the Lehigh Stone Co., Kankakee, Illinois (Northern); A. R. Wilson, president of the Granite Rock Co., Watsonville, California (Western); C. M. Doolittle, president of the Canada Crushed Stone Co., Limited, Hamilton, Ontario (Canadian); treasurer F. T. Gucker, president of the John T. Dyer Quarry Co., Philadelphia, Pennsylvania; secretary, J. R. Boyd.

In the new board of directors are: W. M. Andrews, New Castle, Pennsylvania; H. E. Bair, Toledo, Ohio; W. W. Boxley, Roanoke, Virginia; C. D. Brewer, Duluth, Minnesota; L. R. Cartwright, Indianapolis, Indiana; Col. O. P. Chamberlain, Chicago, Illinois; J. E. Cushing, Schenectady, New York; F. O. Earnshaw, Youngstown, Ohio; E. Eikle, New Braunsfels, Texas; E. E. Evans, Toledo, Ohio; F. T. Gucker, Philadelphia, Pennsylvania; J. L. Heimlich, Le Roy, New York; William E. Hilliard, New Haven, Connecticut; W. P. Hodgkins, Chicago, Illinois; Thomas Mc-Croskey, Knoxville, Tennessee; R. Newton McDowell, Kansas City, Missouri; Col. E. J. McMahon, St. Louis, Missouri; Stuyvesant Peabody, Chicago, Illinois; E. N. Ragland, Raleigh, North Carolina; Russell Rarey, Columbus, Ohio; H. E. Rodes, Nashville, Tennessee; James Savage, Buffalo, New York; F. W. Schmidt, Morristown, New Jersey; J. F. Schroeder, Davenport, Iowa; W. L. Sporborg, Syracuse, New York; J. W. Stull, Rocky Point, Virginia; R. B. Tyler, Louisville, Kentucky; Mortimer M. Wandell, New York City; G. J. Whelan, Cleveland, Ohio; A. L. Worthen, New Haven, Connecticut. For the manufacturers' division: C. B. Andrews, of the Taylor-Wharton Iron and Steel Co., High Bridge, New Jersey; H. M. Davison, Harnischfeger Sales Corporation, New York City; E. G. Lewis, Bucyrus-Erie Company, New York City. Mr. Lewis was elected chairman of the manufacturers' division of the association.

Additional members of the board of directors are the past-presidents: A. J. Blair, Milwaukee, Wisconsin; John Rice, Easton, Pennsylvania; E. J. Krause, St. Louis, Missouri, and Otho M. Graves, Easton, Pennsylvania.

National Crushed Stone Association Banquet, Hotel Hollenden, Cleveland, January 23, 1929.

Forecast of Road Work Excavation

In the January and February issues of *The Excavating Engineer* we presented the forecast for many of the states covering proposed work for 1929. We are now able to supplement these previous reports with information on the following:

Michigan

There will be no definite schedule made out as to work to be awarded by the Highway Department in the State of Michigan during 1929. It is estimated, however, that approximately $20,000,000 will be spent, which will probably be divided into approximately $17,500,000 for road construction and the balance for bridge construction. The construction improvements will consist of an estimated mileage as follows: grading and drainage 100 miles, gravel 100 miles and concrete 375 miles. This estimate represents the State construction program only, and no information is available as to county or local work planned for this year.

From THE MAIL BAG

414 ROWELL BUILDING
FRESNO, CALIFORNIA

The Excavating Engineer,
South Milwaukee, Wisconsin.

Gentlemen: We operate retail lumber yards here in the San Joaquin Valley and have one complete sand and gravel bunker plant with the usual pit under the track, and a heavy chain conveyor elevates the material with shoots from the head to the various bins. This equipment is expensive in its first installation, and requires considerable power and considerable expense on the heavy chain conveyor, which in our case is, from tail to head sprockets, nearly 60 feet.

The writer, in looking over your magazine saw some portable loaders, and it occurred to him that a portable conveyor attached to the top of the bins could be devised to unload sand and gravel into the bunkers at much smaller cost than the average automatic plant now in use.

We can contract the unloading of gravel with hand shovel from flat cars into pile at 12 cents per ton with no investment but a shovel. If we could find a properly designed conveyor that could be lowered into a flat car and fed by hand, it seems to the writer it would be very much more satisfactory for the small handling plant than the very expensive automatic plants now in vogue.

I shall be pleased to hear from any of your readers.

Yours very truly,

PRESCOTT BRICK & LUMBER CO.
By E. M. Prescott, Manager.

EMP-h.

Possibly some of the readers of *The Excavating Engineer* can help Mr. Prescott with his problem. The Editors will appreciate very much your sending him direct any suggestions which may be of value, particularly descriptions of methods used to handle similar problems.

Information Wanted Regarding Slag Separation

The Excavating Engineer is in receipt of an inquiry from *Forges de Vireux Molhain of Ardennes, France.* This firm has a steam shovel digging solidified blast furnace slag. They wish to install a separator to prevent large pieces of iron entering the crusher. The weight of these pieces of iron is from one to two tons. If readers who are familiar with this problem will write to *Forges de Vireux Molhain, Ardennes, France,* describing their own method of meeting a similar problem, the courtesy will be much appreciated.

Ann Arbor, Michigan.

The Excavating Engineer,
South Milwaukee, Wis.
Dear Sirs:

Through your kindness I have received many beautiful catalogues from different corporations. These catalogues are so valuable and helpful to me, and will serve as a guide when I go back to Construction Department of Chekiang Provincial Government in China.

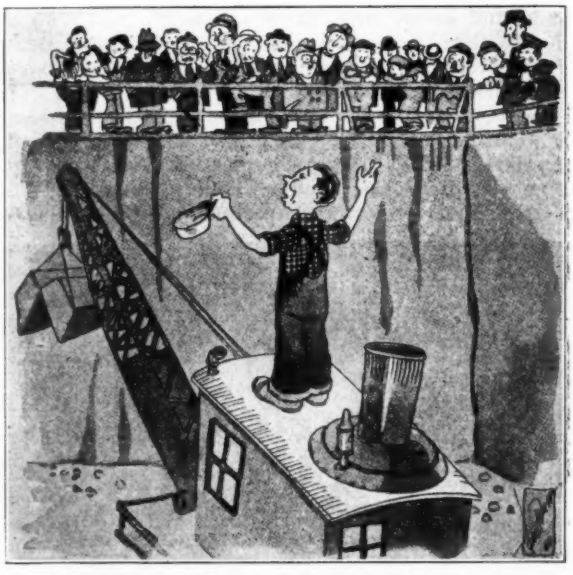
Many corporations requested my answer, but it requires considerable length of time to finish the investigation of all the catalogues.

Consequently I beg you to transfer my gratitude to different corporations for this generosity.

Much appreciation for your kind help.

(Signed) YU TSAI-YANG.

On behalf of Mr. Yu Tsai-Yang the editors of *The Excavating Engineer* wish to acknowledge and thank equipment manufacturers for catalogues sent.



"Folks, I want to thank you for the interest you have shown us while we have labored here. Your response has been exceptional. During the all too short three-week period that we have been excavating here we have drawn capacity crowds at every performance. Capacity in spite of one day's rain and the two days' exhibition across the street when the new clothing store sign was being erected.

"Those of my friends here who enjoyed seeing me put this giant steam shovel through its paces may be interested to know that we are working next week under more ideal conditions on a larger excavation at the corner of 5th and Main Streets. I thank you."

(The above cartoon appeared in a recent issue of Colliers Weekly and cut is furnished through courtesy of The International Engineer.)

EQUIPMENT YOU OUGHT TO KNOW ABOUT

One-Half Yard Gasoline Crane-Shovel-Dragline-Drag-shovel Added to Bucyrus-Erie Complete Line

The new "1020" Bucyrus-Erie one-half yard crane, which was exhibited at the Cleveland Road Show, attracted much attention and favorable comment. This new model, smallest in the complete Bucyrus-Erie line, (ranging from this ½-yard machine to the gigantic 16-yard strippers) is standard equipped with a 48 H. P. gasoline motor, making it the most powerful crane and shovel of its size.

This extra margin of power enables the "1020" to handle harder excavation and heavier crane work. It also makes faster operation possible throughout the entire operating cycle. Extra strength has been built into the machine throughout to insure trouble-free service in the harder digging and at the faster pace which the machine is capable of handling. Many features, not usually found in a machine of this size and type, have been incorporated; such as a one-piece steel truck frame and turntable — enclosed gears running in oil — and anti-friction bearings on all high-speed shafts.

To insure easy mobility, the weight of the Bucyrus-Erie "1020" has been kept as low as is consistent with the necessary strength to handle the hardest work. Weight has been eliminated wherever possible without sacrificing strength — absolute reliability being the standard for this machine.

In design, the "1020" is practically a smaller duplicate of the Bucyrus-Erie "1030," the ¾-cubic-yard gasoline shovel, crane and dragline which won great favor with owners during the past year. The only difference between the "1020" and "1030" is that of size, weight and price.

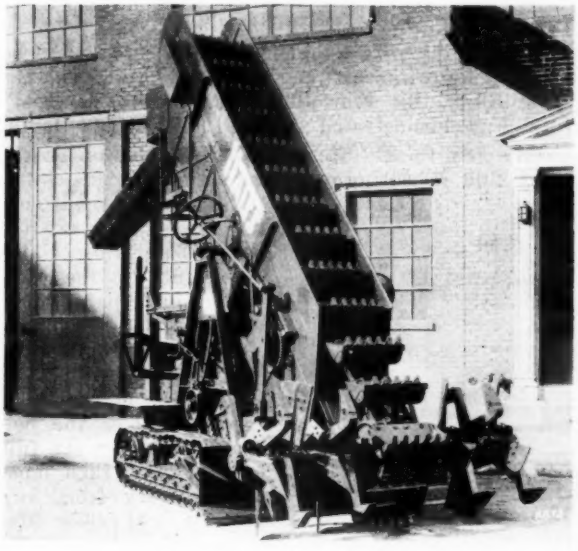
The "1020" is offered by Bucyrus-Erie as a crane, dragline, shovel or drag shovel. Convertibility has been carefully planned for in designing the machine, and it can be easily and quickly changed over from one type to another, as required. It is also furnished as an electric machine where electric power is available.

New Haiss Excavator for Shallow Grading

The need of a continuous digging machine, capable of wide, shallow cuts of depth ranging from skimming to about three or four feet, has been met by the new excavator manufactured by the *George Haiss Manufacturing Company, Inc.*

Primarily this machine has been designed and built for highway grading, and obviates the usual practice of plowing or scarifying preparatory to removing surface material. It can also be used for direct bank digging in sand and gravel pits.

Briefly, the excavator is a machine of the bucket dredge type to which has been added an eight-foot tail shaft with revolving picks and self-feeding propellers. As the tail shaft — driven by the elevator chain — revolves, the picks and propellers respectively dig and feed an 8-foot swath of spoil to the endless procession of toothed manganese steel buckets. The



buckets dig in the area not covered by the picks and propellers, but because of the fact that the picks have a longer reach the buckets do their work in relatively broken ground and are relieved of any abnormal stresses. Discharge from the buckets goes into a swivel chute, which may be directed to the front or to either side of the excavator.

The excavator is creeper mounted, the mounting being of such width that the entire machine can travel in the cut at the new grade. Hence, should the particular use warrant, successive cuts may be taken to reach the desired depth of excavation.

The capacity of the new excavator is claimed to be 1¾ to 2 cubic yards per minute, working 18 inches deep, and at its crowding speed of about four feet per minute.

G. E. Hand Cream Protects Skin

Operators and shovel crews will, no doubt, be interested in a new protective hand cream which has been developed by the research laboratories of the *General Electric Company.* This cream is furnished as a safety measure to those men whose hands are exposed to oil, dirt, grease, varnish and other causes of skin diseases and irritation, encountered within their work. This cream is applied before beginning work and forms an invisible film which quickly dries and is not slippery. By filling the pores of the skin it prevents oil, grime, etc., from working into the skin, and subsequent washing in warm water quickly removes the film of cream and all other stains which would have become worked into the skin tissues.

This cream has now been placed on the market by the Merchandise Department of the General Electric Company at Bridgeport, Connecticut. The G. E. Hand Cream is packed in tubes which sell at 25 cents and also 1-pound cans for industrial use. If the cream is not on the market in your territory it may be secured by mailing orders direct to the *Geneneral Electric Company, Merchandise Department, Bridgeport, Connecticut,* or from any General Electric distributor.

An Unusual Torch Shown at the Road Show by G. H. Williams Company

The exhibit of a unique hand torch proved to be of particular interest to contractors attending the Road Show this year. This improved "Universal" torch was demonstrated at the G. H. Williams Booth.

The "Universal" Torch proves valuable on nearly every kind of heating work, the manufacturers claim, as its unique construction gives much greater heat. This is especially important to the contractor on repair work, as it helps to keep machinery going with least possible shut-down. The swivel head of the "Universal" enables the mechanic to direct the full force of the 14-inch flame on the work from any position. It gives him the advantage of a full 180-degree working range. No blocking up of the torch, or removal of a part that is hard to get at, is needed.

The reservoir of the Williams "Universal" is heavy seamless steel tubing with the head and base shrunk in, riveted and brazed. It is claimed it will not leak even if hit with a sledge hammer. The patented swivel head is constructed so that the valve seats accurately at all times. The valve is held firmly in place by a heavy steel spring and stays put in any working position. All unions and connections at the top of the reservoir are of bronze, and the very best materials are used in every part.

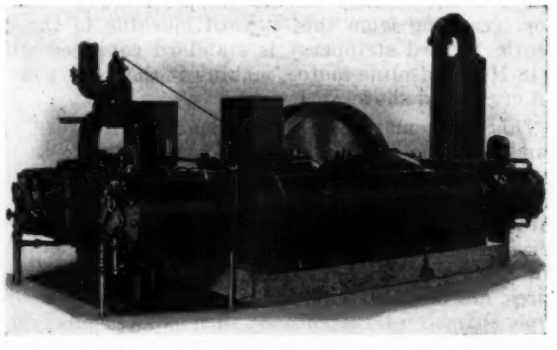
The Williams "Universal" Hand Torch is made in ½-gallon and 1-gallon sizes. Full description and prices on the Williams "Universal" Torch best suited can be secured by writing to the *G. H. Williams Company, Erie, Pennsylvania.*

New Eveready Flasher Offered to Replace Kerosene Oil Danger Signal

The National Carbon Company, manufacturers of Eveready batteries and sponsors of the now famous Eveready Hour Broadcasting program have developed an electric warning signal which they claim has greater visibility than the ordinary oil lantern and is more cheaply operated. This new signal is known as the Eveready Portable Flasher and is 16 inches high and 7 inches in diameter at the base, weighing, including batteries, 16½ pounds. When operated continuously a set of Eveready Columbia batteries in the flasher will last two months. This is because the intermittent flash uses the battery capacity to best advantage. It is estimated that the new flasher operated steadily will cost only $10.00 a year to keep charged, whereas it is claimed that the average kerosene lantern costs $50.00 per year or more for filling, cleaning, replacement of chimneys and depreciation. In addition to the claimed economy of the flasher a further advantage is found in the greater warning power of the intermittent flash which often permits displacing several oil lanterns with a single flasher and still gives greater protection.

Further information regarding this device may be obtained by addressing the *National Carbon Company, 30 East 42nd Street, New York City, New York.*

Ingersoll-Rand Announces New Gas-Engine Compressor



Ingersoll-Rand Company have announced a new direct-connected gas-engine-driven compressor. It is designated the Type XG, and is being introduced following several years of development under actual operating conditions. It consists of a 2-cylinder, 4-cycle gas engine, direct connected to Ingersoll-Rand compressing cylinders with I-R plate-type valves.

Features of the XG are its rugged construction, accessibility of frames and running gear, and economy of floor space and foundation requirements. The compression end can be furnished to accommodate any of the usual conditions of pressure range. The XG is adapted to continuous service for general industrial use. It is described in Bulletin 3149, available on request to *Ingersoll-Rand Company, 11 Broadway, New York City.*

No Cartoon Necessary Here

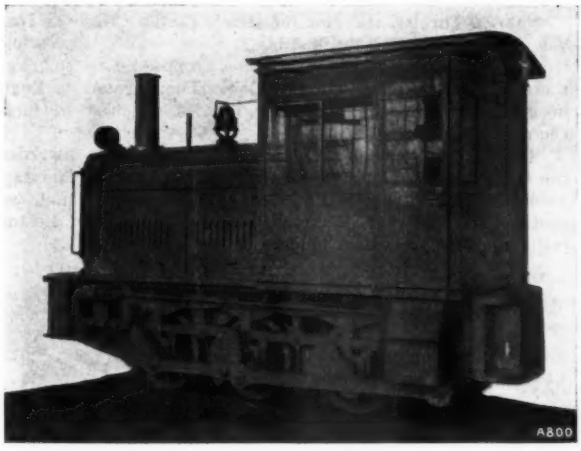
Young lady (just operated on for appendicitis) — "Oh, doctor, will the scar show?"

Doctor — "Not if you are careful."

Six-Wheel 20-Ton Locomotive for Uneven Tracks Manufactured by Geo. D. Whitcomb Company

A 20-ton, six-wheel, gear and side rod drive locomotive for industrial hauling and switching has been manufactured by the *Geo. D. Whitcomb Company of Rochelle, Illinois.*

This locomotive can be used in industrial plants for switching and on railroads for short main line hauls. It is also designed for quarries, cement plants,



steel mills, lumber tracks. The advantage gained for this six-wheel locomotive is that it gives a very even distribution of weight over the three wheels, and can be operated where the tracks are not in perfect condition or are laid on soft ground.

The Whitcomb locomotive is full gear driven, transmitting the power to the wheels through side rods with standard air brake equipment.

Further information will be gladly furnished by the manufacturer direct.

New Drainage Pump Operated by Johnson Outboard Motor

A new type drainage pump which is powered with a Johnson outboard motor, and which is unique in that it is self-priming and will shut itself off whenever there is no water to be pumped, is now being manufactured by the *Johnson Motor Company.*

Contractors of all kinds, publicity utility companies and others have found uses for this easily portable pump on a wide variety of jobs.

The manufacturer claims it will pump 195 gallons of water per minute and 1000 gallons for the approximate cost of one cent. Further information can be obtained by writing *The Johnson Motor Company of Waukegan, Illinois,* and mentioning *The Excavating Engineer.*

KOPPEL

The life of a car—the service it renders—is a factor that depends on the skill and faith of its designer and builder.

No matter what type of car you need—Koppel builds it.

Send for Bulletins.

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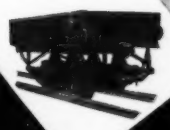


When the Sun goes down . . .

MOON Turbo Generators
1 to 4 KW.

THE wise contractor does not quit at sundown. He works on through the night, speeding up completion and doubling the return on his equipment investment. The smooth, dependable service which a MOON Lighting Plant delivers makes it the ideal unit for construction work.

That is why you will find on so many jobs when the night shift arrives that . . .

the MOON comes on the job.

Write for Descriptive Bulletin E-1.

THE MOON MANUFACTURING CO.
108-128 No. Jefferson Street, CHICAGO

SHOTS FROM THE FIRING LINE

Canada

Toronto and Vicinity

BY C. F. ENGLAND

Ernest Clarke, Limited, of Windsor, Ontario, have been awarded contract for anchorage pier on the new Ambassador Bridge which connects Windsor and Detroit. There is a considerable amount of concrete involved in this structure.

The John S. Metcalf Co., Ltd., have contract for the construction of a large addition to the grain elevator at Goderich, Ontario. This job is for the Goderich Elevator and Transit Co., Ltd.

The Hydro Electric Power Commission of Ontario are making an addition to the Queenston power house. This entails a lot of rock excavation as well as concrete on the sub and super-structure.

Bonvivere and Company are keeping both their Erie shovels busy; one is spending all its time on basement excavation while the other is doing quite a cut on road construction at Weston, Ontario.

New Brunswick

The Provincial Public Works Department of New Brunswick has awarded a road construction project of two miles south of Hartland to Messrs. Dexter and Richards, Saint John, New Brunswick. The contract price is about $72,000. The construction of this road will afford a new route for motorists on the eastern side of the Saint John River between Hartland and Woodstock.

Maryland Notes

W. B. Lindquist, shovel superintendent of Jessup, Maryland, sends us the above snapshot showing an Erie-B steam shovel in a 14-foot cut in Southern Maryland. At the time the picture was taken Mr. Lindquist was superintendent for the St. Mary's Construction Company of Leonardtown, Maryland. Mr. Lindquist also sent us another picture which is not clear enough for reproduction, showing a view of a Gas + Air machine operated for John Arborio of New Haven, Connecticut, on a job at Rye, New York. Excavation there was solid rock and the Gas + Air moved 300 yards a day.

Boston and Vicinity

Just received a card from Albert Butterfield. Bet you can't guess where he's vacationing. Yes, way down in Cristobal, Canal Zone. Mr. Butterfield says they're having real summer weather.

Charles Turgiss, operator for Henry Ford at Wayside Inn, has just returned from his honeymoon, which was spent traveling throughout the South. They stopped off to look over the Bucyrus-Erie plant while at Erie. **The Excavating Engineer** wishes both you and Mrs. Turgiss the best of luck, Charlie.

The M. McDonough Company of Saugus was awarded the Quincy, Massachusetts, highway contract let on Tuesday, February 12th. This is the second Massachusetts highway contract let this year, Warren Brothers Company of Boston being the first successful bidders of the season.

"The End of a Perfect Day"

'Twas some convention we had the other day.
There was L. C. Wheeler and Fred McKay,
When along came Berlin Batson
With our old friend Jim McLeod,
And, oh yes, Joe Ambrose managed to get around.

Alas, there was Mack with his usual smile—
Bet a dollar his jockey beat the others a mile.
George Quinton, too, dropped in for a while,
And Danny Keefe paid us a visit that day
As did Jesse Morse and Aaron Redcay.

"Chung! Chung! Chung!" And "CLIPPER" HOLES GO DOWN—

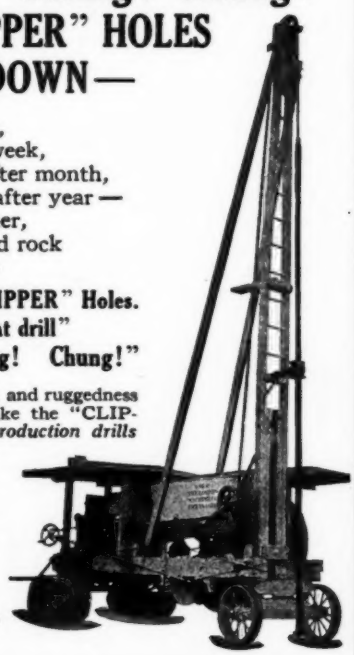
Day in, day out,
Week after week,
Month after month,
Year after year—
Winter or summer,
Through hard rock
Or soft—

Down go the "CLIPPER" Holes.
"Drills that drill"
"Chung! Chung! Chung!"

Simplicity of design and ruggedness of construction make the "CLIPPERS" *constant production drills* that mean new economies in bast hole drilling.

There is a "CLIPPER" specially adapted to your specific needs.

May we send you descriptive matter?



THE LOOMIS MACHINE CO.
(Established 1842) **K Street, Tiffin, Ohio**

NEW!

The HAISS EXCAVATOR

Every contractor who has used the new Haiss Excavator or seen one in action has been impressed by its ability to dig continuously at 1¾ to 2 cubic yards per minute. For grading, stripping and direct bank digging this machine has set a distinctive mark.

May we send you our new bulletin?

Geo. Haiss Mfg. Co., Inc.
144th St. and Park Ave.
New York, N. Y.

A DIGGING MACHINE by HAISS

In writing to Geo. Haiss Mfg. Co., Inc., please use post card bound in the center of this number.

SHOTS FROM THE FIRING LINE — Continued

It isn't very often that we have the pleasure of having young ladies visit our office, but when we do its something to remember. Among our young visitors this week were Miss Mary Sullivan, daughter of Mr. Joseph Sullivan of Jeremiah Sullivan Sons; and Miss Skelton, daughter of Mr. L. H. Skelton.

Detroit and Vicinity

BY P. M. RICHARDS

In the February issue of The Excavating Engineer "S. A. Healy" appeared in error as the author of the Detroit and Vicinity News in the "Shots" columns. Our apologies to Mr. Healy. — Editors.

The Michigan Municipal Contractors Association, a chapter of the A. G. C., have elected the following officers for the year 1929: Hugh McLean, President; J. S. Ventrille, Vice-President; Fred Jeynes, Treasurer; C. R. Leannane, Secretary; William Callahan, Director; E. J. Early, Manager. Committees for the year were consolidated so as to include one on labor and safety, one on legislation, engineering and credits, and a third covering membership, entertaining and finance. One of the major efforts of the association during the coming year will be built on the subject of credits, and the following resolution applying to the purchase of all supplies was passed, and copies sent to all of the local dealers. The communication as sent to the dealers reads as follows:

STANDARD CREDIT TERMS

At a regular meeting of the Michigan Municipal Contractors Association held Tuesday, January 8, 1929, the membership by unanimous vote went on record and gave their unqualified endorsement to a Standard Credit Policy, herein stated, for the purchase of materials and supplies.

GREDAG
REG. U.S. PAT. OFF.
LUBRICANTS

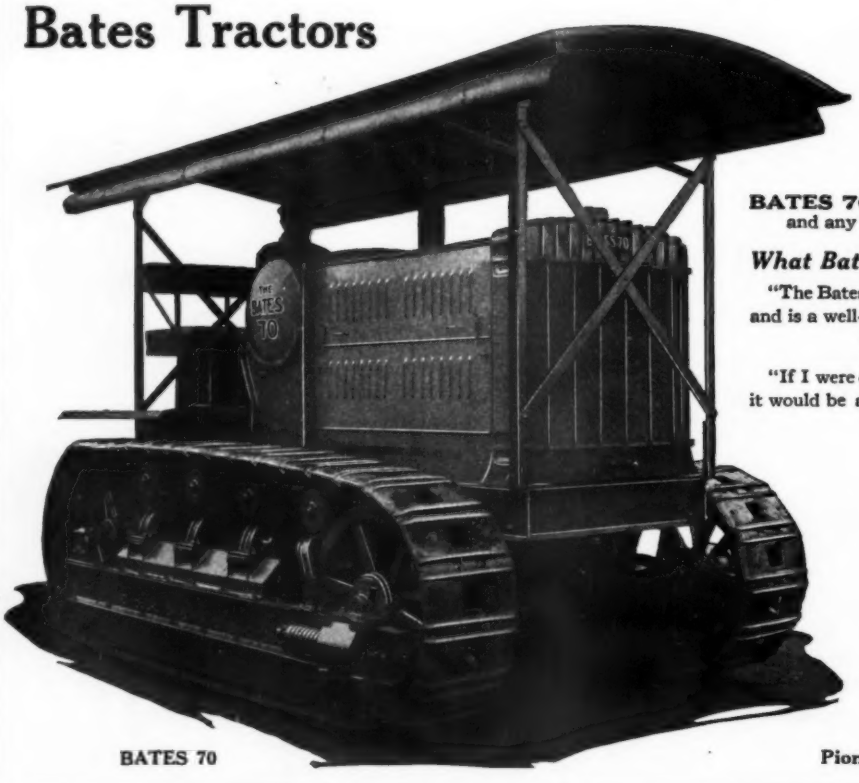
SHOW UP WELL UNDER THE MOST SEVERE CONDITIONS

WATER-PROOF, WEATHER-PROOF, SHOCK-PROOF AND EFFICIENT

Start the season right. Profit by the experience of leading makers and operators of shovels, cranes, hoists, ditchers, crushers, conveyors and mixers, who use and recommend these time-tested aids to continuous and economical operation. Write for catalog and information.

ACHESON GRAPHITE CORPORATION
NIAGARA FALLS, NEW YORK

Bates Tractors



BATES 70

3 Sizes

BATES 28 — Made for 8-foot Graders and equipment of similar capacity.

BATES 40 — Made for 7-yard Crawler Wagons, 10-foot Graders, etc.

BATES 70 — Made for 12-foot Graders and any of the largest tractor tools.

What Bates Customers Say:

"The Bates has less parts to get out of order and is a well-built machine."
— A North Carolina Contractor.

"If I were on the market for another tractor it would be another Bates."
— An Indiana Contractor.

"I think the Bates tractor a very good one. It has a very good pulling power on a Grader." — A Pennsylvania Contractor.

Write for New Catalog.

Bates Manufacturing Company
JOLIET, ILL., U. S. A.
Established 1883

Pioneers in the Tractor Industry

"HERCULES" RED-STRAND

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WIRE ROPE

For Economical Wire Rope Service

The exceptional strength and sturdiness of "HERCULES" {Red-Strand} Wire Rope enables it to handle a large tonnage for each dollar of its cost, and its dependability eliminates unexpected and costly tie-ups.

Furthermore, "HERCULES" {Red-Strand} Wire Rope is made in both Round Strand and Patent Flattened Strand constructions in order to meet all working conditions. We recommend it especially for use on cranes, derricks, dredges, excavators, hoists and shovels.

If you will tell us how you use wire rope, we shall be glad to suggest the construction we consider best for your work. Your inquiry will not obligate you in the least, and it may lead to a big saving.

We would appreciate hearing from you.

FOR SUCCESSFUL PERFORMANCE · A.G.C.-A.

The Wire Rope with the Service Record.

Made Only by **A. Leschen & Sons Rope Co.** *Established 1857*

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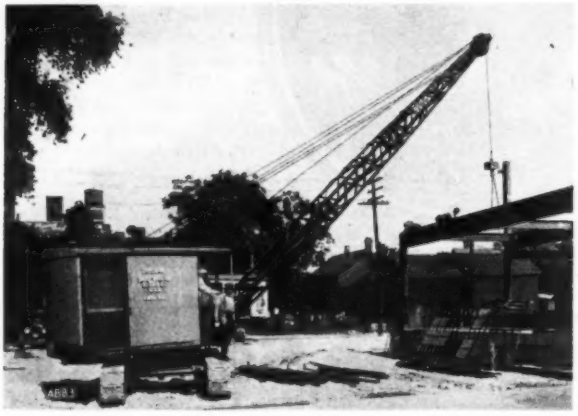
SHOTS FROM THE FIRING LINE — Continued

The Credit Terms are those outlined and prescribed by the ALLIED CONSTRUCTION INDUSTRIES, effective as of January 1, 1929.

1. A cash discount will be allowed on bills for materials and supplies if paid on or before the tenth prox.
2. Thirty days following the discount date becomes the Automatic Shut-off date, at which time no further extension of credit will be allowed, and sales go on a cash basis.
3. Material and supply dealers will report monthly to the Allied Construction Industries all past due accounts, from which will be compiled and issued to A. C. I. members a Master Arrears List.

The by-laws of the association have been amended so as to permit of associate members, on the theory that the success of the industry can only be acquired by the participation of all branches working together.



Above the Roura Iron Works Type 1030 Bucyrus-Erie Crane places steel beams on an oil supply station being built in the western part of the city of Detroit. Mr. Roura has used this machine very extensively in the erection of steel buildings of their fabrication, and reports that it has given extremely satisfactory service. In the background can be seen one of Carnaghi Bros. Type B-2 machines which was used in the excavation for the storage tanks on this job. The beam which is being placed in this picture weighs three tons.

J. A. Mercier Brandon Company are making rapid progress on the excavation of the Springfield Water Reservoir for the department of water supplies. This is a subcontract under the W. E. Wood Company.

Put An "IRON MULE" on the Job

This is the 4-yard "Iron Mule."

It Licks Trucks and Teams

"IRON MULES" for years have made phenomenal profits for dirt-moving contractors. There are 2 sizes — the 4-yard with power hoist dump and crawler tracks, and the 2-yard with gravity dump. These sensational dirt haulers will get where trucks and teams can't go. Write for illustrated broadside that fully describes them.

There's a 2-yard also.

Dump Bodies Too

HUGHES-KEENAN Dump Bodies for all makes of light trucks are famous wherever dump bodies are used. Made in 1 and 1½ yard sizes, equipped with gravity dump, underbody hand hoist or power hoist. Write for descriptive folder.

HUGHES-KEENAN CO. Mansfield, Ohio

Every day it pays its way-

POWERED with a heavy duty, industrial type motor (Waukesha), the Utility Model O with its sturdy construction finds a wide range of service. Weighing only 2400 pounds and with an overall width of 7 feet 2 inches, it can be moved quickly from one job to another under its own power or by light trailer. It handles efficiently many jobs which are not practical for heavier machines.

Model O represents all that is found in other high-grade cranes of its class, with the exception of weight and price. Two speeds for every operation give it unusual service flexibility.

For clamshell, dragline or backfilling operations within its capacity, it has no equal. Rehandling crushed stone, sand or gravel, cleaning up surplus excavation on sewer and water jobs, digging manholes, cleaning old surface drainage ditches or digging new ones, lowering and replacing heavy pipe sections in sewer or water trenches, and many other jobs — all are included in a day's work for this Utility Buckeye.

Complete construction and performance data are contained in our Crane Bulletin. Write for your copy.

The Buckeye Traction Ditcher Co.

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There's a Buckeye Sales and Service Office Near You

for over thirty years **Buckeye**

3 to 50 Tons

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LOCOMOTIVES

GEAR DRIVEN TYPE

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3 to 50 Tons

***The* BALDWIN LOCOMOTIVE WORKS**

PHILADELPHIA, PENNSYLVANIA

In keeping with the Progress shown in the Manufacture of

GASOLINE LOCOMOTIVES

HAS TAKEN A SUBSTANTIAL INTEREST IN THE BUSINESS OF THE . . . . .

George D. Whitcomb Co.

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A. S. Goble, 1010 Pine St.
RICHMOND, VA.
Geo. F. Jones, 512 Rich. Tr. Bldg.
HOUSTON, TEXAS
R. A. Hey, 1108 2nd Nat'l Bk. Bldg.
PORTLAND, ORE.
A. J. Beuter, 313 Amer. Bk. Bldg.
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20 to 100 Tons

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RAILWAY TYPE MOTORS

4 WHEEL TYPE — **8 WHEEL TYPE**

20 to 100 Tons

In writing to Geo. D. Whitcomb Co. please use post card bound in the center of this number.

SHOTS FROM THE FIRING LINE — Continued

St. Louis Items

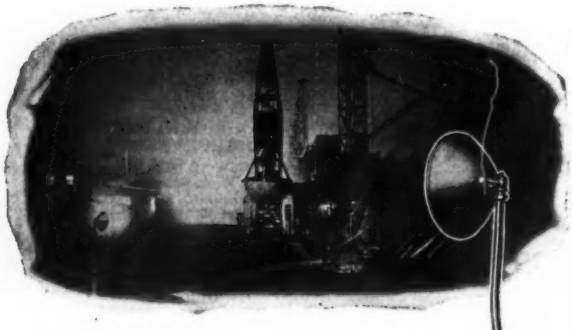
BY A. J. KOENIG

Plans for construction of the Snyder, Roswell & Gulf Railroad, to be financed by Houston capital, has been completed, and grading will start as soon as legal technicalities have been complied with. The Snyder, Roswell & Gulf Railroad, also known as the East & West Railroad, will extend 210 miles west of the terminal of the Roscoe, Snyder & Pacific Railroad at Fluvanna, Texas. The estimated cost is $3,500,000. Ed. Kennedy, Houston, Texas, is promoter.

Preparations for flood control work on the Mississippi River for the year beginning July 1st was announced by the Flood Control Board. Plans for the expenditure of $30,000,000 is provided by the War Department appropriation bill. Condemnation proceedings for the levees and spillway near New Orleans and for the levee on the west side of the floodway opposite Cairo, Illinois, are under way. The Board expects these rights-of-way to be secured at an early date.

The Texas Empire Pipe Line Company at Springfield, Illinois, filed an application for a certificate of necessity and convenience to construct a pipe line in Pike County, through Morgan, Cass, Logan, De Witt, McLean and Livingston Counties to Reddick, a distance of 195 miles.

R. J. Blackburn, St. Louis, Missouri, was low bidder, with a bid of $83,407, for the construction of the concrete viaduct over River des Peres on Morganford Road of this city. The viaduct will be 322 feet long and have five spans. Its width will be sixty feet with a forty-foot roadway. Work on the new structure will start about March 1st, and is to be completed in one year.



Keep going—
night and day!

YOUR equipment is built to earn twice as much as day-time operation alone can produce. It is built to give you twenty-four hours of service every day.

With Carbic Flood Lights you can get full value from equipment,—your men can work rapidly and safely at night as well as by day. The great power in the clear white rays of Carbic Light is perfectly diffused. There is no glare and no dark shadow. It penetrates right through fog, smoke or dust. It is a good light to work by.

The Carbic Flood Light is low in first cost and inexpensive to operate. It is simple, rugged and portable.

Double your equipment value by working at night with

CARBIC LIGHT

OXWELD ACETYLENE COMPANY
Unit of Union Carbide and Carbon Corporation

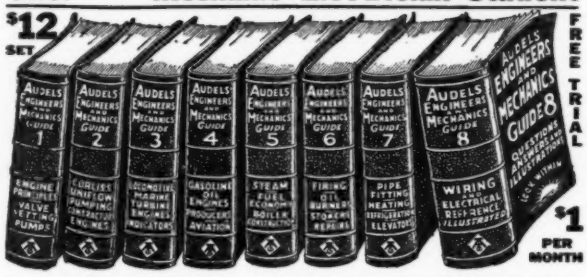
NEW YORK CITY: Carbide and Carbon Building — CHICAGO: Railway Exchange Building
SAN FRANCISCO: Adam Grant Building

Carbic is distributed by the Union Carbide Sales Company through its national chain of warehouses and is sold by jobbers everywhere.

CARBIC
PROCESSED CARBIDE FOR CARBIC LIGHTS & GENERATORS

AUDELS ENGINEERS & MECHANICS GUIDES

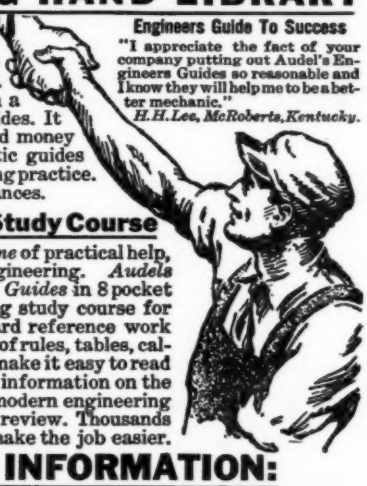
For Every Engineer–Machinist–Fireman Oiler– Mechanic–Electrician–Student



A HELPING HAND LIBRARY

Here are the correct answers to Engineering and Mechanical Questions—in a handy form. When you are stuck on a job, consult Audel's Guides. It will save time, labor and money for you. These authentic guides teach the best engineering practice. Don't guess or take chances.

Engineers Guide To Success
"I appreciate the fact of your company putting out Audel's Engineers Guides so reasonable and I know they will help me to be a better mechanic."
H. H. Lee, McRoberts, Kentucky.



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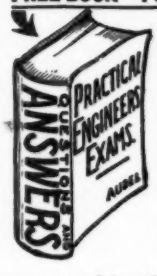

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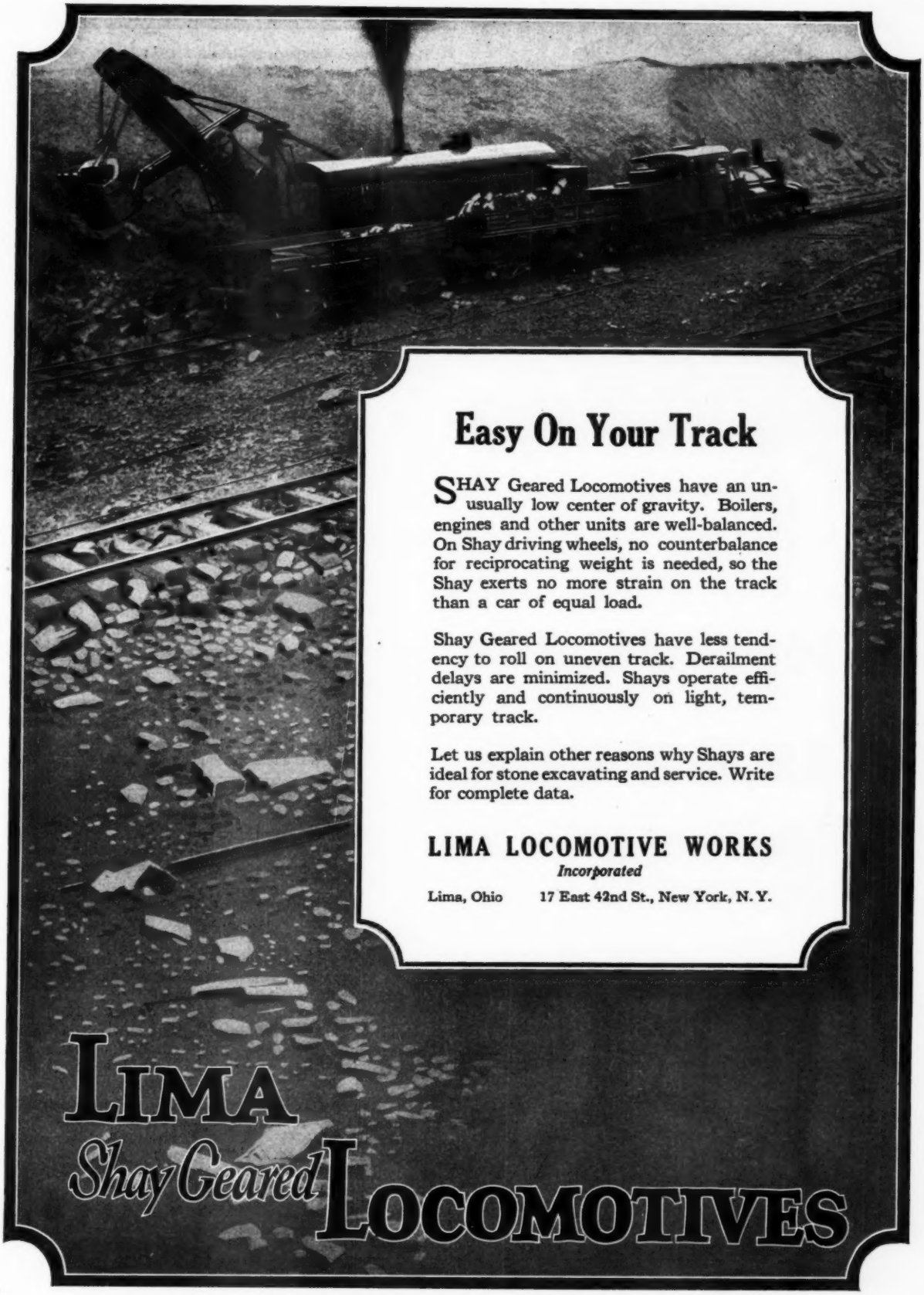

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SHAY Geared Locomotives have an unusually low center of gravity. Boilers, engines and other units are well-balanced. On Shay driving wheels, no counterbalance for reciprocating weight is needed, so the Shay exerts no more strain on the track than a car of equal load.

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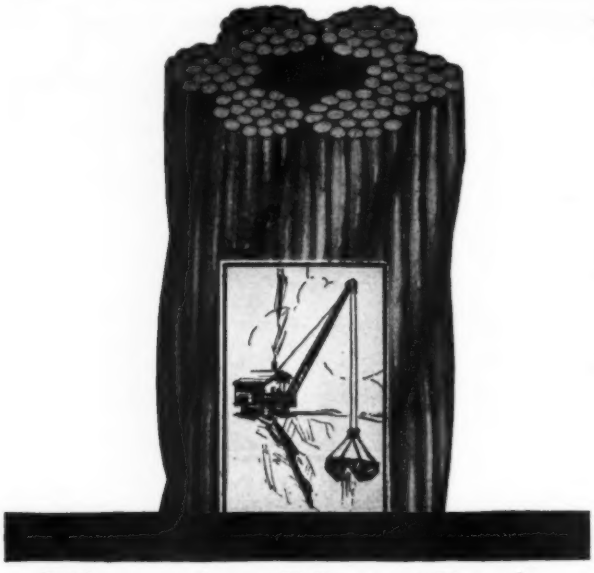

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SHOTS FROM THE FIRING LINE — Continued

The Missouri Southern Railroad, J. A. Fremon, vice-president, Leeper, Missouri, has plans for the construction of 18 miles of railroad in Reynolds and Shannon Counties.

Sternberg Co., Inc., St. Louis, has contract for 400,000 cubic yards of levee work in Mississippi.

Woods Bros., Lincoln, Nebraska, has contract for the construction of dikes at Moberly Bend, near Hodge, Missouri, on the Missouri River.

Central Engineering Co., Davenport, has contract for paving Route 82, Section 128, Henry County, Illinois. Bid $238,743. Route 81, Section 102, same county, $161,051.

Hartman-Clark Co. was awarded contract for paving Route 70A, Section 108, La Salle County, Illinois. Price $24,039. Also granted contract for bridge on Route 89A, bid $126,497.

E. M. Melanahan Construction Co., Algonquin, was awarded contract for paving Route 59A, Section 119, Lake County, Illinois, on their bid of $221,000.

Hoefken Bros. of Belleville, Illinois, was the successful bidder for the construction of a new main sewer system for that city. Their bid was $159,577.

N. W. Eatson, Topeka, Kansas, was awarded contract for four miles of grading on Kansas Project No. 752 in Douglas County, Kansas.

E. W. Kolterman, Omaha, was low bidder on twenty-five miles of grading and culverts in Kansas, Projects Nos. 747, 748 and 749.

J. J. Lamereaux, Omaha, has contract for grading and culvert on seven miles of highway in Cloud County, Kansas.

E. J. Eiff Company, Quincy, Illinois, was awarded contract for grading and paving about fourteen miles of highway on Outer Belt Road, Jackson County, Missouri.

O'Connor Bros. Construction Co., Kansas City, Missouri, were low bidders on bridges for Outer Belt Road, Jackson County, Missouri.

R. K. Walters was awarded contract for grading and culverts on Kansas Projects Nos. 729, 730 and 731 in Elk County.

Campbell and Lachenmaier were awarded a nice contract for grading in Cloud County, Kansas.

Horton-Price Construction Co. of Camden, Arkansas, whose bid was $29,827, was awarded contract for the construction of a dump for the Ouachita River bridge.

Cameron, Joyce & Co. were awarded a nice contract for the construction of pavement on Route 113, Section 111, in Kankakee and Wills Counties, Illinois, on their bid of $159,580.

The Kansas City Southern has plans for the construction of a double-track railroad bridge across the Missouri River, about three miles east of the Milwaukee bridge, near Kansas City, Missouri. Estimated cost $2,300,000. Approval of the War Department has been asked.

The City of St. Louis and the Missouri Pacific Railroad Company have made preliminary plans for the construction of a reinforced concrete viaduct, to carry the Oak Hill Branch of the Railroad over Kingshighway. L. W. Bowen is City Engineer.

In writing to American Steel & Wire Company please use post card bound in the center of this number.

SHOTS FROM THE FIRING LINE — Continued

Winterburn & Lumsden of Grand Junction, Colorado, have a contract for seven miles of gravel surfacing amounting to $82,589.

M. E. Carlson Construction Company, Denver, Colorado, were awarded contract for dam construction amounting to $61,000.

The above picture is a view on Oklahoma road work being handled by Gaines Brothers Company of Fairfield, Oklahoma. This outfit have two Bucyrus-Erie Gas + Air shovels on the job and are getting consistent big yardage on all kinds of digging.

Pacific Coast Notes

BY F. L. BEST

T. T. Brown Corporation, Los Angeles, report their job at Capistrano Beach going in good shape. Operator Matt is at the levers on the Bucyrus-Erie GA-2.

Wm. Ruddock, Los Angeles, has all his machines busy in and around the city.

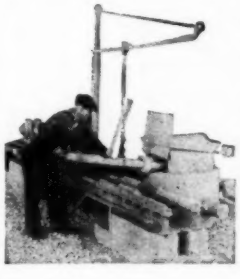
Honek, Robertson & Peckstein, Los Angeles, report their machines busy in the city on basement work. Jimmy Edwards and Hi Allerton are doing their stuff on the Bucyrus-Erie machines.

Western Placer Mines, Los Angeles, have their Bucyrus-Erie GA-2 working on their mining project in the Randsburg district. Operator, A. M. Beals.

Griffith Co., Los Angeles, have recently been awarded contract for highway construction in Los Angeles County, involving 122,000 cubic yards, which will be done with three B-2 and one GA-2 Bucyrus-Erie machines.

Fisher, Ross, MacDonald & Kahn, Inc., Azusa, have started moving equipment to the site of the San Gabriel Dam, for which they have the contract. Equipment so far is four 50-B, and one GA-2, Bucyrus-Erie machines.

THE ARMSTRONG BIT DRESSER



Churn drill bits sharpened on an Armstrong Bit Dresser will cut from 30% to 100% faster. This has already been proven in more than 150 quarries and open pit mines to their profit.

See P. & Q. Handbook, page 71, 1928
Keystone Metal Quarry Cat., page 160

ARMSTRONG MFG. CO.
921 Chestnut St. Waterloo, Iowa

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WHEN the day is done—when, for the last time, the dipper has smashed its way through the blasted rock—when the last car has gone merrily on its way toward the plant—is the rope on your shovel ready for the next day's hard service?

When you buy wire rope for your shovel, dragline or crane from the Specialty Department of Bucyrus-Erie Company you can be sure of getting the best that your money can buy for your job — rope that has been tested and proved for your particular machine — rope best built to stand the type of service that it will be called upon to do on your operation — rope that when the day is done is ready to carry you safely through the day to come.

When you order your rope from Bucyrus-Erie it is a simple process. All you have to do is to specify the use of the rope and to give the machine number. You can be sure that the right rope will come through promptly.

How about ordering an extra rope right now?

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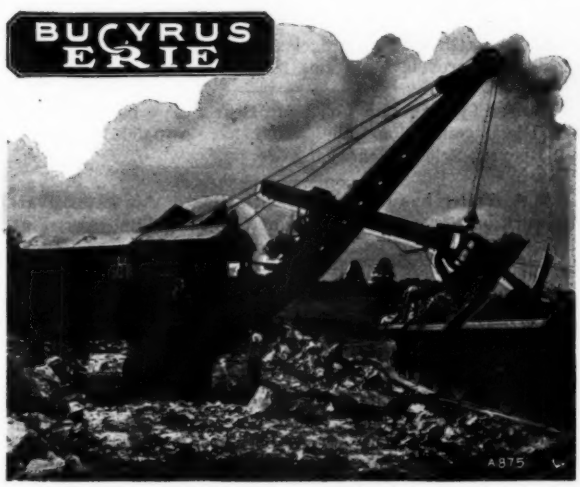

SHOTS FROM THE FIRING LINE — Continued

John C. Gist, Arcadia, California, has his Bucyrus-Erie GA-2 grading for the camp site of the San Gabriel Dam, which is a Los Angeles County project. He also has one Gas + Air-2 working on the St. Francis Dam disaster reconstruction.

Lewis Construction Company, Los Angeles, report good progress on the Ventura County job, with Bob Robertson doing his stuff on the Bucyrus-Erie GA-2. They also have one GA-2 and one B-2 working in Los Angeles.

J. G. Donovan & Son, Los Angeles, report they will complete their section of the high gear road to Lake Arrowhead this month, which will be one of the scenic drives of Southern California. The job was done with seven Bucyrus-Erie machines — 5 B-2 and 2 GA-2's.

Wm. Horn Co., late of Lock Haven, Pennsylvania, is busy moving their equipment to their future place of business at Puente, California. This includes five Bucyrus-Eries GA-2 machines. They just completed one of the largest highway contracts ever let in the state of Pennsylvania.

Plans are being completed by Chief Engineer J. L. Burkholder of Albuquerque, New Mexico, for reclamation of 120,000 acres of land along Rio Grande River (Sunshine Valley Project), which involves 25,000,000 cubic yards excavation.

C. W. Hartman, Bakersfield, was awarded contract for highway construction in Kern County.

Davisson Contracting Company, Monrovia, were awarded contract for street improvement in Arcadia.

Arizona State Highway Commission has under consideration a paving program estimated to cost $30,000,000, involving over 1000 miles of highways.

Pearson & Dickerson, Riverside, California, have their Gas + Air Bucyrus-Erie working in the Grand Canyon, Arizona. Operator Shippey at the levers.

Los Angeles Board of Public Works ask for bids for constructing a tunnel under Mulholland Drive at Sepulveda Boulevard. The tunnel will be 650 feet in length, 42 feet in width. Estimated cost is $550,000.

Basich Bros., Chamber of Commerce Building, Los Angeles, were the successful bidders for improving Atlantic Avenue. Low bid was $348,655.03.

A. T. Matthews, Los Angeles, was the successful bidder on street improvement in Los Angeles on Muscatel Avenue.

Hauser Construction Co., Long Beach, report their job at San Diego going along fine. They have two 50-B and two B-2 Bucyrus-Eries on the job.

A. A. Yetter has his Bucyrus-Erie Gas + Air on excavating work on Ventura Boulevard at this time. Bob Atkins at the levers.

San Gabriel Dam job getting a fine start, with Ralph Bell in charge of excavation. Harvey Slocum is general superintendent.

Chicago and Vicinity

H. J. O'Meara of 4041 Ellis Street, Chicago, Illinois, wants an opportunity to bid on excavating contracts. Contractors who have work to sublet, are requested to write to Mr. O'Meara.

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and drill tools for every kind of Big Blast Hole Drilling
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Write for Bulletin GR-8.

NORDBERG MFG. CO., Milwaukee, Wis.

THE NORDBERG PATENTED TRACK MACHINE

TRADE NOTES

The Trackson Company, Milwaukee, Wisconsin, announces that arrangements have been completed with the Thorman W. Rosholt Company, 928 South Fourth Street, Minneapolis, Minnesota, for the distribution of Trackson Tractor Equipment for the McCormick-Deering Industrial Tractor. The new distributors will handle the territories covered by branches of the International Harvester Company at Fargo and Grand Forks, North Dakota; Winona, St. Cloud, Minneapolis, and Mankato, Minnesota, and Eau Claire, Wisconsin.

The Wm. H. Ziegler Company of Minneapolis, Minnesota, is opening up a branch office in Fargo, North Dakota. This office will be in charge of O. H. Strand who has been with the Ziegler Company about three years. Mr. Strand will represent the accounts which the Minneapolis office handles, including a complete line of contractor's equipment, coal handling machines, and all kinds of material handling machines. Among the accounts are Barber-Greene, Bucyrus-Erie, Chain Belt, Sterling Wheelbarrow, Williams Buckets, Plymouth Locomotives, Butler Bins, etc.

Caterpillar Tractor Co. of San Leandro, California, announces it has concluded negotiations with Russell Grader Manufacturing Co., Minneapolis, Minnesota, whereby it has acquired the business and facilities of the latter company. The Russell line of road-building machines will henceforth be manufactured by Road Machinery Division of Caterpillar Co. at plant formerly occupied by Russell Co. at Minneapolis. Caterpillar Tractor Co. dealers throughout this country and abroad will handle sale of "Caterpillar" tractors, Russell Road Machinery and Holt Combined Harvesters, latter being produced in Harvester Division of Caterpillar Co. located at Stockton, California. Caterpillar Co. has announced intention to build an eastern combined harvester factory at Peoria, Illinois, where its principal tractor plant is now located.

John A. Manley, who has, for the past three years, been Manager of Sales Development for Fairbanks, Morse & Company of Chicago, has been elected vice-president in charge of sales according to a recent announcement of the Board of Directors. In its varied line of products which include Diesel engines, pumps, motors, scales, railway equipment, small light plants and automatic water plants and similar items, Fairbanks, Morse & Company has an interesting sales problem. That the problem is being effectively handled under the present management is shown by the steadily increasing volume of business flowing into the Fairbanks-Morse organization.

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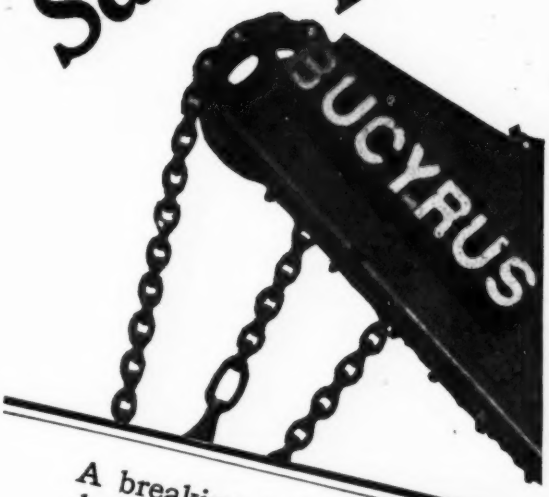

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S. G. TAYLOR CHAIN CO.

Established 1873 P. O. Box 117-B. Hammond, Indiana

Blaw-Knox Company of Pittsburgh have recently issued a new catalog of Dreadnaught Buckets. This book of thirty pages and cover is one of the most attractive catalogs which has come to our desk for some time. It is excellently illustrated with both part and working views of the Blaw-Knox Dreadnaught Buckets. There is also a complete table, showing the various sizes with detailed dimensions and capacity, proper sizes of cable, length of line required, weights and so forth.

Copies may be obtained by writing to the Blaw-Knox Company at Pittsburgh, Pennsylvania, asking for Bucket Catalog, Form Number 1059.

The National Slag Association, 937 Leader Building, Cleveland, Ohio, have recently issued a book entitled, "General Building Construction with Slag Concrete." This is Symposium No. 12 of the Association, and sums up very fully experience in use of Slag as aggregate in concrete in buildings. Copies may be secured from the National Slag Association at a nominal price of twenty-five cents.

The Autocar Company, truck manufacturers of Ardmore, Pennsylvania, have recently issued a forty-page booklet of interest to contractors and highway engineers. Six pages are devoted to a comprehensive review of the outstanding developments of leading manufacturers supplying the highway and contracting fields with shovels, concrete mixers, ditch diggers, conveyors and so forth. There are numerous pictures and descriptions of Autocar trucks at work, together with the usual catalog material. Copies may be had by writing the Autocar Company of Ardmore, Pennsylvania.

Hercules Powder Company have just issued two new bulletins, one on blasting supplies and the other one on high explosives and blasting powders. These bulletins, excellently prepared and well illustrated, describe in the first-mentioned volume the various blasting supplies, such as caps, fuse, connecting wires, blasting machines, crimpers, etc. In the second-mentioned volume the various gelatines, dynamites and powders, with such other special explosives manufactured by the Hercules Powder Company, are described. Use of these various explosives are also explained, and both books are valuable for all users of explosives, especially in view of the new developments in the manufacturing of these products which have provided new products better adapted to handle certain kinds of work. Copies of the booklets may be obtained by addressing the Hercules Powder Company at Wilmington, Delaware, or through their local sales offices.

The "Story of Geology," by Allan L. Benson, published by the Cosmopolitan Book Corporation of New York, is one that will interest all of our readers. For the layman it has been most difficult to secure any accurate knowledge of geology because all of the books previously published on that subject have been written for the geologist. After the first introductory chapter the reader found himself lost in a mass of technical details and enormous names which soon put him to sleep.

The "Story of Geology," however, is written for the layman, and does not attempt to go too deeply into scientific details. It does, however, give a very vivid picture of the structure and construction of the earth.

The book is fascinating, easily readable and well illustrated. Copies may be purchased at book stores or direct from the Cosmopolitan Book Corporation, 57th Street at 8th Avenue, New York, New York.

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